The Journal OF THE Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOLUME XIV—No. 1
WHOLE NUMBER 161

GRAND RAPIDS, MICH., JANUARY, 1916

YEARLY SUBSCRIPTION, $3.50
SINGLE COPY, 50c

CONTENTS

ORIGINAL ARTICLES

EDITORIAL

Office of Publication, 91 Monroe Ave. Grand Rapids, Mich.
Next Annual Meeting, Houghton, 1916

Entered as second-class matter March 12, 1913, at Grand Rapids, Mich., under the Act of March 3, 1879

CONTENTS—Continued

DEATHS

STATE NOTES and SOCIETY NEWS

BOOK REVIEWS

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

Vol. XV GRAND RAPIDS, MICHIGAN, JANUARY, 1916 No. 1

Original Articles

THE NEWER METHODS OF DIAGNOSIS IN THE SURGERY OF THE KIDNEY.*

DANIEL N. EISENDRATH, A.B., M.D.
Professor of Genito Urinary Surgery, College of Medicine, University of Illinois; Attending Surgeon. Michael Reese Hospital, Chicago Ill.

I shall not attempt to review the clinical pictures presented by the various surgical lesions of the upper urinary tract, but rather direct your attention to the revolution which has taken place through the employment of our newer methods of diagnosis. In no other field of surgery have we advanced as rapidly toward a nearly ideal position in diagnosis. It has been a march of progress of which no member of the profession can afford to remain ignorant, and although the use of some of the methods must of necessity remain in the hands of those especially trained, yet this is no reason why every patient should not be given the benefit of a thorough examination.

What are the methods that have rendered our ability to make a diagnosis more accurate? 1. The employment of radiography of the urinary tract as a routine measure. 2. The use of the cystoscope and of the ordinary and X-ray ureteral catheters, and, finally, 3, the method known as pyelography, which consists in distending the lumen of the ureter and renal pelvis with collargol or similar solutions. These in brief are the chief weapons which we summon to our aid today in the conquest of the many difficult clinical problems. Such diagnostic methods have by no means supplanted the carefully taken history or the thorough examination of the patient, but they have made their interpretation a much easier task. Not so many years ago the principal data upon which we based our diagnosis of some surgical lesion of the upper urinary tract was enlargement of the kidney, renal colics, and pus or blood in the urine. If a patient had the symptoms of cystitis, he was treated locally for this condition without a thought of the possibility that the real disease might be higher up in the urinary tract. Even at the present day many such cases are treated medically for months and years, because the ease with which the more exact methods can be applied, is not sufficiently known.

Now before taking up the application of these newer methods in the diagnosis of the individual disease, let me offer a few suggestions derived from a large experience in this class of cases. The most satisfactory X-ray pictures of the urinary organs are obtained by the use of a compression apparatus to limit respiratory mobility and to bring the tube as close as possible to the parts. Both kidneys and the upper portion of both ureters can be included in one picture, and the lower portion of both ureters and the bladder in a second one. In very stout individuals it is best to make a separate exposure for each kidney. The angle at which pictures of the bony pelvis, (that is, of the pelvic portion of the ureters) are taken, is of great importance, because shadows of ureteral calculi may be obscured by the sacrum or the pubic bone, unless the pelvis is tilted as much as possible. (Fig. 1 and 2).

We prefer at the Michael Reese Hospital to use a soft tube, enabling us to secure more detail. The alimentary tract is thoroughly emptied by giving the patient an ounce of castor oil about twelve hours before the picture is taken, followed by two colonic flushings and limiting the diet to clear liquids, during the interval. One should be able to see in the X-ray picture, the shadow of the lower two-thirds of both kidneys, the outline of the psoas muscle, the shadows of the last two ribs, the transverse processes of all the lumbar vertebrae, and the details of the structure of the bodies of the lumbar vertebrae and of the pelvic bones. (Fig. 3). Nothing will lead to more disappointing results than to try to make a diag-

*Read at the annual meeting of the Michigan State Medical Society, held Sept. 2 1915 at Grand Rapids.

nosis from a poor radiograph, and every one who has seen the pictures which can be obtained by experienced radiographers will never again be satisfied with makeshift ones. Ureteral catheterization should never be done in the presence of any acute infection of the upper urinary tract. I have seen some disastrous

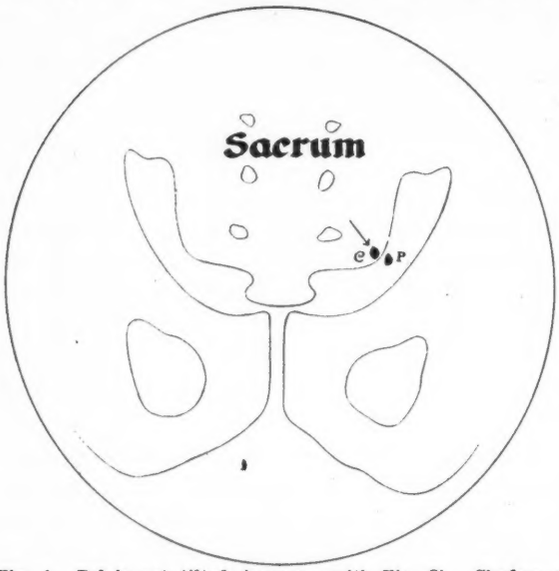


Fig. 1. Pelvis not tilted (compare with Fig. 2). Shadow of ureteral calculus (c) indistinct because it is lying over sacrum, while extraureteral shadow (P) is quite distinct (X-ray tracing.)

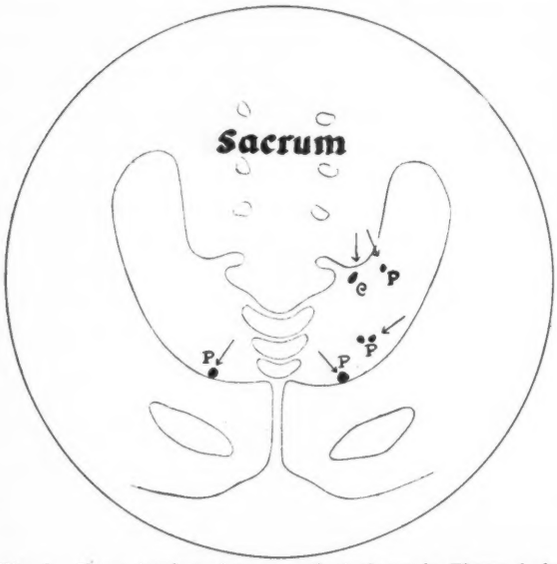


Fig. 2. X-ray tracing of same patient shown in Figure 1, but pelvis has been tilted. The shadow which proved to be that of a ureteral calculus (C) shows in a clear space. One also sees the shadows of a number of phleboliths (P) i. e. extraureteral shadows.

generalized infections follow such a catheterization, and even a simple cystoscopy is often poorly tolerated by such patients. Through the use of a special ureteral catheter called a shadowgraph or X-ray catheter, whose walls are impregnated with some substance giving a deep shadow in the X-ray picture, we can employ the same ureteral catheter for collecting urine from the kidney and for the differentiation of shadows within the urinary tract from

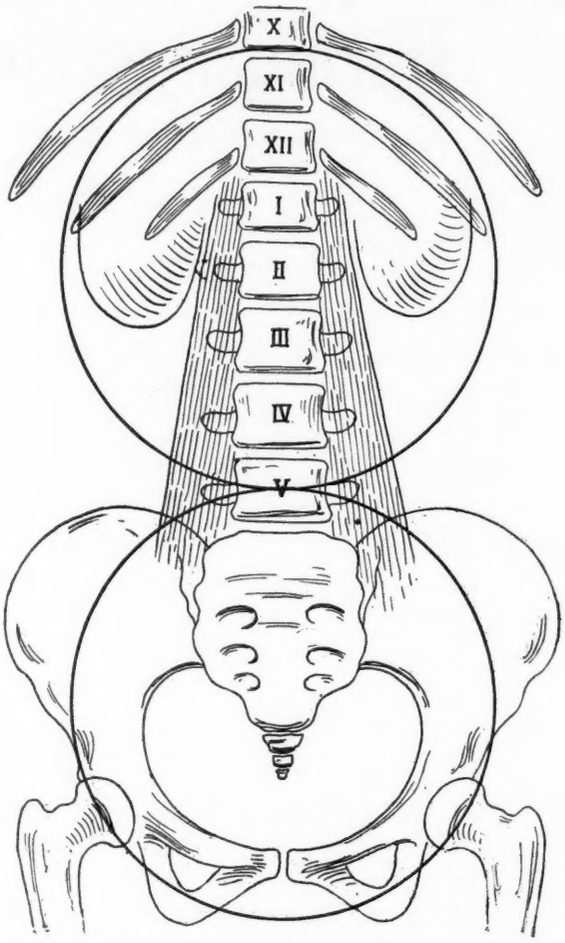


Fig. 3. Areas to be included in radiographs of the upper and lower urinary tract. The pictures must show the last two ribs, the transverse processes and bodies of all the lumbar vertebra, the shadow of the Psoas muscle and the lower two-thirds of each kidney. (See text.)

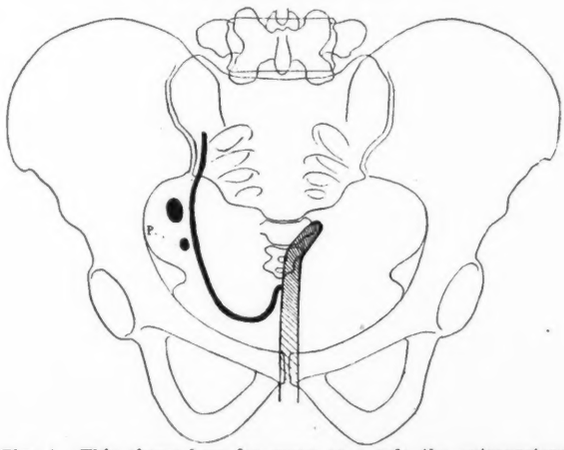


Fig. 4. This shows how far away as a rule the extraureteral shadows (P) are from the X-ray catheter, the cystoscope being left in place while radiograph is taken. (X-ray tracing.)

those lying close to it. (Fig. 4). I prefer to have the picture which includes the pelvic ureter taken with the cystoscope in the blad-

der when we wish to differentiate between shadows due to phleboliths, etc., and those due to calculi in the pelvic ureter. (Fig. 5). The shadowgraph or X-ray catheter holds the ureter rigid and does not allow it to fall outwards as occurs when the cystoscope is withdrawn and the catheter left without any support except the soft curving wall of the pelvic ureter. Unless the size and position of a shadow leaves but little doubt that it is due to a renal or ureteral calculus, one must never omit taking a second

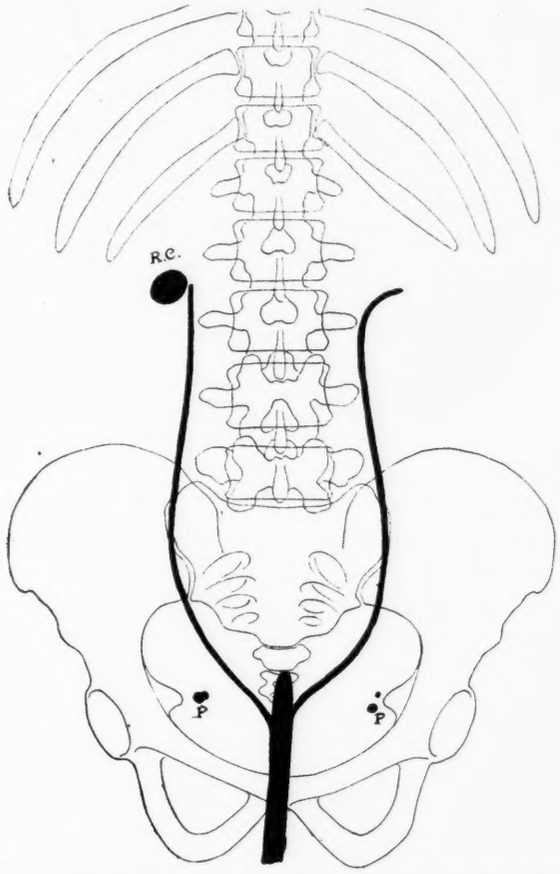


Fig. 5. Tracing of X-ray from case in which a renal calculus (R. C.) shadow and two extraureteral shadows, due to phleboliths (P) were present. This shows how essential it is to employ the X-ray catheter in cases of doubtful shadows in the urinary tract.

series of pictures with a shadowgraph catheter introduced into the ureter of the side upon which the shadow lies. Even though the clinical history be typical for calculus in the kidney or ureter, many mistakes have been made in the past in omitting this step in diagnosis.

Now just a word in regard to the dangers of collargol. The experimental work of Dr. Schnoor, now of Grand Rapids, and myself, published in January, 1915, in the *Journal of the American Medical Association*, shows clearly that if we use an elevation of three feet, that is, allow the solution to flow in under moderate gravity pressure, none will be forced into the tissues of the kidney. As soon as more pressure is used, the solution, no matter what it may be, is mechanically forced into the kidney tissue, and from here into the renal veins, and thence into the general circulation, causing death from pulmonary embolism. Pyelography can I grant be dispensed with in many cases where we use the shadowgraph or X-ray catheter, but it has become a confirmatory diagnostic procedure of such great value in a number of diseases that the earlier reports of ill-effects following the injection of collargol should not prejudice us to discard the method. I prefer the use of 10 per cent. collargol solution for pyelography, and the extensive experience of those who have used it by the gravity method without ill results speaks for the safety of the method.

1. CONGENITAL MALFORMATION AND ANOMALIES.

These are no longer regarded as medical curiosities, but they occur often enough to be thought of in every case. One never knows until every diagnostic resource has been exhausted whether some malformation of congenital origin or an anomaly of the kidney or ureter, or both, is the direct cause of the clinical symptoms. The most common lesions of this kind which occur are the following:

a. HORSESHOE KIDNEY.

Hydronephrosis, both infected and non-infected, and calculus formation[1] are the most frequent conditions which have been found in the solitary kidney, whether it be of the ordinary horseshoe or more completely fused varieties. We can always suspect the presence of such malformations, if there is a transverse enlargement extending across the abdomen at the level of the kidneys, or when the X-ray (in cases of calculus formation) shows shadows close to the median line. Through the introduction of collargol into the pelves of a fused kidney, we can readily recognize the condition by the close proximity of both pyelograms to the median line, and the fact that the ureter leaves the lower border of the injected pelvis and not its inner border, as in the pyelogram of a normal pelvis, or when the two pelves are superimposed

b. CONGENITAL MALPOSITION (DYSTOPIA) OF THE KIDNEY.

If there are no symptoms referable to the urinary tract, the condition may not be sus-

1. Eisendrath. Clinical Importance of the Horseshoe Kidney. Surgery, Gynecology and Obstetrics, October, 1912.

pected until found accidentally. I have seen two cases in which a pelvic kidney was mistaken for an abdominal tumor, and also an autopsy where the displaced kidney had obstructed the head during childbirth. Clinically, we see these cases on account of symptoms of obstruction to the outflow of urine or stone formation, and one should always suspect an anomaly if a shadow or a pyelogram (Fig. 6) is not in the position of the normal kidney, or the X-ray catheter shows that the ureter takes an unusual course. Pyelography and the use of the shadowgraph catheter have enabled us to make a diagnosis in a number of these cases where the displacement, whether congenital or acquired, varied in degree from a kidney lying in the first, second, or third (pelvic)

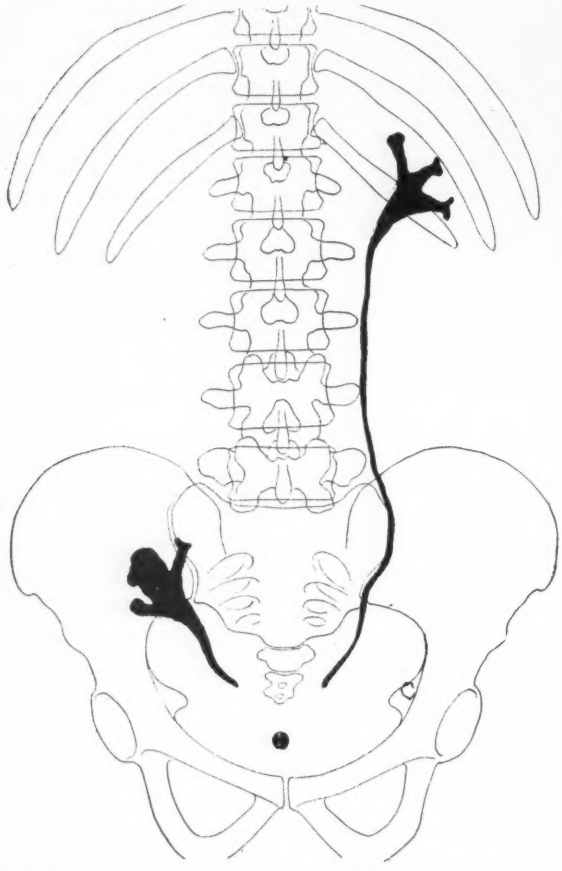


Fig. 6. X-ray tracing of case in which renal pelves were filled with collargol. On the right side the kidney is seen to lie at the level of the brim of the bony pelvis while on the left side the pyelogram is of the usual shape and the kidney in a normal position.

position of displacement, where ureteral catheterization and cystoscopy alone give us but little information.

d. INFANTILE KIDNEY OR HYPOPLASIA.

The diagnosis of the persistence of a congenital lack of development of a kidney must always be thought of.

By the use of pyelography we have an accurate way of recognizing the absence of a normal degree of filling of the ureter or renal pelvis. It is a vital matter to be able to recognize this condition before the opposite kidney is removed, or when a calculus, as in one of my cases, obstructs the normal ureter and the

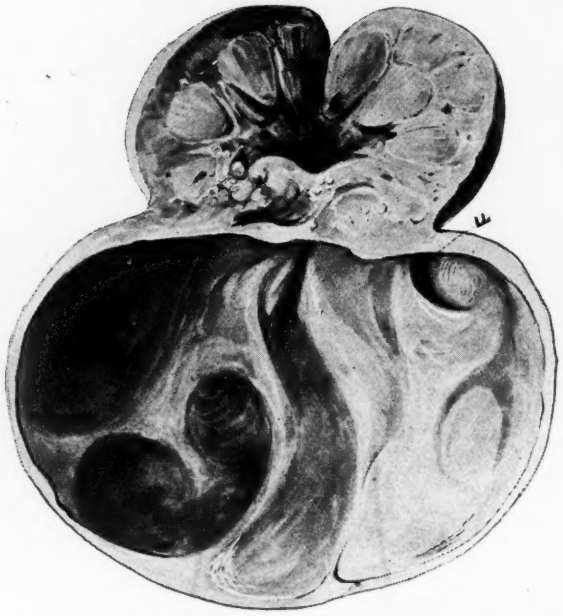


Fig. 7. Congenital anomaly of the left kidney. There were two completely separated halves of the kidney. The upper half was normal in every respect and had its own renal pelvis and ureter. The lower half, owing to the abnormal insertion of the ureter (U) had been converted into an infected hydronephrotic sac.

entire task of renal secretion devolves upon the infantile kidney, resulting in calculous anuria.

Single Kidney.—This condition can, of course, be thought of when only one ureteral orifice is seen, but in pyelography we have an absolute method of demonstrating the presence of only one kidney.

Double Ureters and Double Renal Pelves—One never knows when these anomalies will be encountered. In a recent case (Fig. 7) an infected hydronephrotic sac was found, which had developed in the lower pelvis of a kidney completely separated from an upper pelvis. Each pelvis had its own ureter, and the two ureters fused just above the bladder, so that the condition could not be suspected when cystoscopy showed a single orifice on each side. Pyelography enables us to readily recognize the malformations.

Movable Kidney and Intermittent Hydronephrosis.—The simpler method of determining the degree of mobility of a floating kidney still remains a most reliable one. By filling the renal pelvis with collargol and then taking a picture with the patient first in the erect and

then in the horizontal positions, we can ascertain whether the range of movement of the kidney accounts for the symptoms. I believe that there are but few indications for operation in movable kidney, but have seen cases where the symptoms continued even after fixation of the kidney. Pyelography shows whether the ureter has been kinked, with resultant dilatation of the renal pelvis as the result of operation, or whether it has been properly anchored, and is not the cause of the post-operative symptoms.

In intermittent hydronephrosis due to the temporary kinking of the ureter of a floating kidney (showing clinically the symptoms of a Ditel's crisis), the filling of the renal pelvis and ureter with collargol is an excellent method of reproducing the colicky pain experienced by the patient during the attacks, and also of demonstrating the degree of dilatation of the renal pelvis.

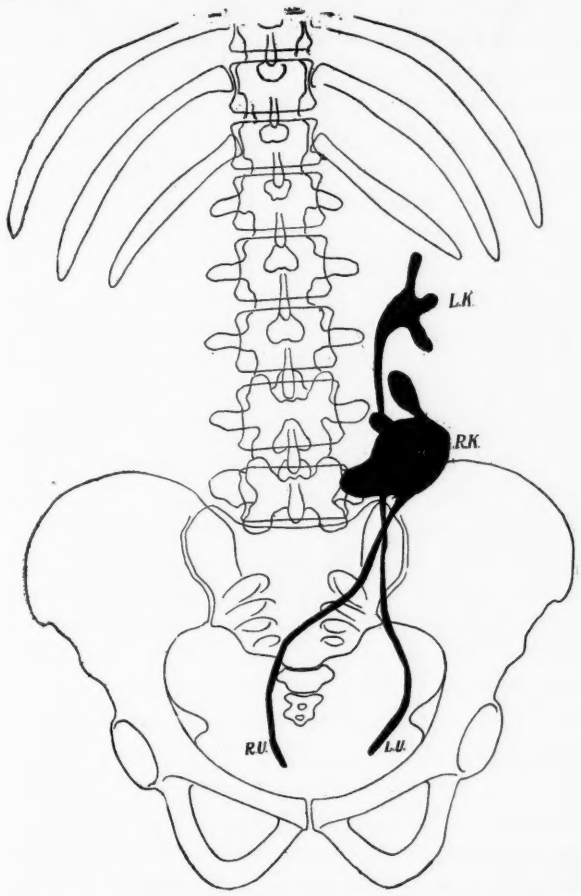


Fig. 8. Two kidneys on one side. Pelvis and ureter filled with collargol before taking radiograph. L. K. Left kidney showing normal renal pelvis. R. K. Right kidney showing hydronephrotic pelvis. L. U. Left ureter. R. U. Right ureter.

Hydronephrosis.—This term is now employed to describe the condition of dilatation of the renal pelvis proper and its calyces at the expense of the kidney tissue, with resultant atrophy of the parenchyma and stretching of the capsule. Whether the cause be pressure upon the ureter from extrinsic tumors, etc., or whether the obstruction be due to a stricture or a stone, the effects are the same. A hydronephrosis may be aseptic and present clinically only the symptoms of urinary obstruction, such as tumor, pain, etc. When infection supervenes, we speak of an infected hydronephrosis, and limit the older term pyonephrosis to the condition of destruction of the kidney tissue, as distinguished from pressure atrophy due to mechanical obstruction.

Cystoscopy and ureteral catheterization enable us to determine the source of the pus, whether renal or vesical, in a case of pyuria, but in pyelography and by our functional tests we have two quite reliable methods of determining how much kidney tissue remains, i. e., is not destroyed or compressed, and whether it may be necessary to remove the kidney.

The extent of the dilatation of the renal pelvis can be more accurately determined by pyelography than by any other method, and one can safely employ a large quantity of solution. Our experiments have shown that it requires more pressure to force collargol or cargentos into the circulation in a hydronephrotic than in a normal kidney, but one must always allow all of the solution to escape after the picture is taken, lest some toxemia result.

Renal Infections.—I would like to make these suggestions to the general practitioner in regard to infections of the kidney. First, always think of the kidney as the seat of trouble whenever you have a case of persistent or recurrent fever, in which no other focus of infection can be found. It is a common occurrence to see cases of the most severe renal infection without any signs pointing to the urinary tract. Second, have the bladder examined and the ureters catheterized when the urine contains pus, or there are symptoms of cystitis, and local treatment does not help. Third, I make it a routine practice to have radiographs made in every case of infection of the upper urinary tract. Not infrequently a calculus will be found as the source of trouble. Even when there has been no history of pain or colics, a calculus may be the cause of the obstruction, which is the predisposing factor in many cases of renal infection.

Cultures should if possible be made from the urine obtained by catheter from each kidney and one must always suspect that the renal in-

fection is of tuberculous nature, if the cultures remain sterile. In cases of persistent fever without any or few localizing signs, I have learned to look for its source in the kidney many times, with gratifying results. Whether the organisms have reached the kidney through the blood stream or by way of the lymphatics from the bladder or colon is not easy to determine and is beyond the province of the present paper. The old method of attempting to make a diagnosis of the source of pus by the variety of epithelium or the acidity or alkalinity of the urine is an obsolete theory.

Pyelography gives us valuable information as to the degree of inflammatory dilatation of the ureter and renal pelvis or of destruction of the kidney-tissue itself.

Tuberculosis of the Kidney.—We are now able to recognize this disease at an early stage i. e. when only the kidney has been affected, through the use of the cystoscope and ureteral catheter. The cystoscope will tell us whether we are dealing with a kidney or bladder disease as the source of the pus.

In many cases, the bladder changes are not specific of tuberculosis, whereas in others they are so characteristic that one can make a diagnosis from the cystoscopic examination alone, without ureteral catheterization. The latter, aided by pyelography to determine the extent of the destructive changes in the ureter and kidney is of great confirmatory value.

In the case of closed tuberculous pyonephrosis (where no communication exists to the bladder) the diagnosis by our newer methods is of course impossible and must be made by other means. Ordinary radiography is of but little aid in the diagnosis of tuberculosis of the kidney.

I can highly recommend the Forssell method in examining for tubercle bacilli in the urine. The urine is collected for twenty-four hours and then the sediment centrifuged for two or three hours before being stained.

Renal and Ureteral Calculi.—The larger my experience grows, the more do I summon the shadowgraph catheter and pyelography to my aid in the differentiation of shadows within from those external to the urinary tract.

With the exception of very soft uric acid calculi, one can say, "no shadow, no stone." In several recent cases where the history of repeated colics pointed strongly to stone in the ureter and the radiograph showed only a faint shadow, I have been able to make a positive diagnosis by inserting a shadowgraph catheter or using collargol. The latter will often show a distinct dilatation of the ureter above a calculus, or leave a deeper shadow where the stone lies.

Radiography and its more recent aids has taught us that we can often predict the location of a calculus in the kidney by its relation to bony landmarks in the radiograph, and so favored the removal of calculi through an incision in the renal pelvis (pyelotomy). Again if there is a solid cast-like shadow or many scattered ones it tells us that the whole renal pelvis is filled or that a pyonephrosis exists. The shadowgraph catheter and pyelography enable one to distinguish gallstones and similar extra-renal and extra-ureteral shadows from those in the urinary tract. Typical ureteral colics may be due to a number of different causes than stone, and it is only by the use of our modern methods that we can learn the underlying cause. When one remembers that typical renal colics may be due to stone, ureteral stricture, passage of plugs of pus or clots of blood, to tabes, kinking of the ureter, uric acid and oxalate crystals passed in large quantities and finally to nephritis we will be careful not to make a snap diagnosis.

Nothing is more embarassing than to operate with negative results, for stone just because there is a classical history or a shadow has been found. Let me urge the routine use of the shadowgraph catheter and pyelography if you wish to avoid the many pitfalls in this class of cases.

Kidney Tumors.—The cystoscope will tell one at a glance whether the bleeding has its origin in the bladder or higher up. Of course, there are many tumors which are only suspected when an enlargement is found in the kidney region. A pyelogram will soon disclose whether the abdominal tumor is of renal origin or not. If the shadow of the distended renal pelvis shows it to be of normal contour and in the usual position of the kidney, a tumor of the latter is readily excluded. If a neoplasm has invaded the renal pelvis proper or the main calyces, the pyelogram is of the greatest assistance, showing a compression of elongation of the pelvis and its calyces.

DISCUSSION.

DR. THEO. A. McGRAW, DETROIT: All that I can say is that I have been exceedingly interested in this paper of Dr. Eisendrath's and nothing would please me better than to be a young man again and take lessons from him in this particular specialty.

DR. WM. J. CASSIDY, DETROIT: In the past five years we have practically made it a standing rule in Dr. McLean's service in all intra-abdominal conditions or lesions referable to intra-abdominal organs, in which there is any doubt as to

involvement of the genito-urinary system, to cystoscope and radiograph that field. You would be surprised to see how many case we have checked up when the symptoms have apparently been referable to intra-abdominal troubles—that is, gastric mainly—localizing the lesion either in the kidney, in the ureter or in the bladder, or at times in the glands in the retro-peritoneal spaces. Simple passage of the shadowgraph catheter will not always tell you that your stone is in the ureter, for it may be a calcification of the glands back of the ureter and you cannot localize it with sufficient definiteness or exactness to say that your stone is in the ureter. There is a certain percentage of stones which will not show with the X-ray. Pure uric acid stones will cast but a very faint shadow. If you push a stone, where there is considerable fat, especially as in the mesentery or the perinephrium, you will have a great deal of difficulty in determining your shadow, for your acid crystals are of practically the same density as your fat tissue; consequently, they will cast no more dense shadow than the tissues surrounding them. Recently, with the advent of collargol and later thorium nitrate, which is now claimed to be much more safe for the localization of stones of the ureters and pelves, if you inject especially collargol into the pelvis of the kidney or the ureter, a stone will absorb the collargol and it has been proven that this stone will retain that collargol for about one hour so that if you get a negative X-ray with the first attempt, your ureteral catheterization with your stilette catheter, and then inject the pelvis and ray it again, you will in all probability find your stone. If you do not find it on the second radiograph, make a third, after your pelvis has been emptied by the ureteral catherization, and in all probability your stone will show.. Haenisch reports that 22 per cent. of the stones in the ureter will not show. That has not been our experience. We have found practically 90 per cent. of the stones in the ureter, I do not know whether his radiographer is poor, or his patients are too stout, or his stones have been all urates. I cannot see, with the modern X-ray apparatus and with the modern tubes, why you cannot show a stone in the ureter or in the pelvis of the kidney in conjunction with your catherization in practically 90 per cent. of your cases.

As regards the question of diagnosis, especially in relation to tuberculosis: We have had this very forcibly brought to us time and time again. Patients come with a history of long--continued cystitis, they have been treated with irrigations, usually of an irritating solution, the diagnosis being simply inflammation of the bladder, nothing further being done, the patient running a temperature every evening, until when the patient presents himself the diagnosis usually carries with it the prognosis. That is, tuberculosis of the kidney is unilateral in the vast majority of the cases in the early stages, bilateral tuberculosis of the kidney is a rare condition early, and if you make your diagnosis, which can be comparatively easily done with your catheterization separately of the ureters in connection with the X-ray and the chemical tests, there is no excuse for seeing patients with unilateral tuberculosis of the kidney advance so that surgical procedures are far beyond their help. So that I wish to emphasize very, very strongly Dr. Eisendrath's remarks and I cannot say too forcibly that there should be more cystoscopes used by the surgeons in general—they should not be allowed to rust out, rather than wear out.

DR. J. J. RAYCRAFT, PETOSKEY: The one fault that I have to find is that it is a paper too learned to be followed out in detail by the men who must do this kind of work, not in Chicago, but in towns much smaller. When I see the complications shown by such pictures as we have here, not from photograph but from the picture, I doubt very much whether we can get this kind of picture and most men in this audience who will attempt to find such pictures as have been shown here on the screen will not be able to find them. I do not believe it is possible in radiographing for stones of the ureter or of the pelvis that in one-half of the cases rayed. in one-tenth of the cases rayed, that the information we get will be of decisive value. We cannot get a kidney stone picture nine times out of ten that will give satisfaction. Now, if we were to submit ourselves to this catheterization of the ureters, to this chemical that is being injected in under pressure up through the ureter into the pelvis of the kidney, it would be too much for the ordinary practitioner to go on with. I would think that the danger of perforation from too much pressure, from forcing this fluid up there might be almost as great as the danger of a laparotomy. There is nobody, I think, in this audience here who has done much of this work but will say that the ordinary opening of the abdomen where we find sufficient symptoms to warrant it should be done rather than these things which after they have been accomplished are not satisfactory in the end. These men who listen to this paper will not go home and follow it; they will go into the abdomen where they can feel the ureter, the kidney, the urinary bladder, and they can make the diagnosis and do the operation. I think this, that the gentleman from Chicago has too learned a paper for the ordinary surgeon in a small town in the State of Michigan. I was very pleased with the paper, I would be glad indeed to have the Doctor continue to give us information, which I feel is good; but, practically, I cannot go home myself and accept all of it, because I have radiographed the lower abdomen and have not found satisfactory pictures.

DR. C. D. BROOKS, DETROIT: These remarks of Dr. Raycraft would seem to me apropos in a medical meeting of twenty-five years ago and not in a modern scientific meeting of a surgical section. I do not believe that any man from Chicago can bring a paper down here on diagnosing and be too much for us. (Applause). We want more men like Dr. Eisendrath to hammer things in and if those of us who are supposed to do surgery cannot do cystoscopic work, cannot catheterize ureters and read X-ray pictures, they had better hire some one who can or send the patient to some one who can. I approve of everything that Dr. Eisendrath has said. If we cannot learn to do this sort of thing ourselves, let us have others do it for our patients.

DR. FRANK W. ROBBINS, DETROIT: Of course, we all know, Mr. Chairman, that Dr. Raycraft stirs up a discussion. He is always good at that, and I think we know the reason for which he made these remarks, and that is in order to stir up a discussion. I do not intend to speak to Dr. Raycraft's remarks, but to express my gratification at the paper that has been read and also to ask Dr. Eisendrath one or two questions, his answer to which will be of interest to me if not any one else. In the first place, I wish to ask in regard to the case he mentioned where there was a double kidney on one side and the ureters opening in their normal position from the bladder and he proved that the kidneys were on one side, his diagnosis of double kidney on that side and the ureters normal being correct. The pelves of the kidneys in that case seem to me to be normal and yet the doctor spoke of the operation and I wanted to know, in the absence of the kidney on the other side, what his operation was for, what it was?

The second point that I wish to make, the doctor has not referred to today at all, but in the answer to which Dr. Eisendrath may give an answer to some of the questions that Dr. Raycraft has brought up. It is in regard to the case that you showed me at the time of our last meeting, in Chicago, of a kidney that you had removed in which there was a tuberculous deposit about the size of half the end of my little finger and you were as proud of your diagnosis and the result, as I was proud of you. I would like to know if Dr. Raycraft or any one feeling as he does could possibly hope to make a diagnosis of that case and cure the patient except by the most advanced methods of examination, and I would like to know how in that particular case of tuberculosis of the kidney, in the very incipiency almost, you made that diagnosis?

DR. DANIEL N. EISENDRATH, CHICAGO: I am sorry, gentlemen, that my pictures could not all have been shown because they would have helped a great deal in making clear what I wanted to say, and I am sure if Dr. Raycraft came to us as an impartial judge, without any prejudice on his part, and I presented my evidence to him, that he would grant, not that every member of the profession should make a diagnosis of this kind, but, at least, and that was my object in bringing this before the state society—I gave the subject considerable thought before I brought this particular paper—that if he cannot make the diagnosis at least he should put the patient on the road toward having a diagnosis made. Now, it is not fair that the progress which we have made should be retarded by those who are not able to do the work themselves. We should be nowhere today if we did not accept of the work that has been done at some of the larger clinics in America, as you know, toward the elucidation of such problems as the diagnosis of gastric and duodenal ulcer. Not long ago, in Chicago, I heard: "I don't think that duodenal ulcer occurs in the proportion of one to a hundred compared with gastric ulcer." Did that stop the other men from working? No, and it will not stop those who are interested in this subject and who feel that their mission is to help, not the fellow surgeon alone, nor the fellow urologist, but to help the fellow practitioner.

About a year and a half ago, there was brought to me from this city a case which illustrates my point better than anything else I could mention. A young man had been suffering from gonorrhea, which could not, apparently, be cured. He kept on

having pus in his urine, his urination became more difficult, he had pain on urination, he had to get up frequently in the daytime and go out to pass his urine, he had to get up frequently at night also; he began to waste away a little bit. Local treatments for gonorrhea were of no avail. One of the men whom he consulted said: "It is impossible to make a diagnosis from the cystoscope, I don't need the cystoscope, all I need is the clinical symptoms," he made a diagnosis of tuberculosis because the tubercle bacilli were found in the urine. The patient was given tuberculin and iodoform into the bladder with absolutely no relief. He was brought to me in Chicago. I am just trying to bestow a wreath of praise upon the general practitioner who brought him, the gentleman who felt that the moment his manner of treatment was of no avail should he refuse this patient the more modern methods of investigation, should he try to keep the patient from such means of help just because he was not willing to acknowledge that other people knew something. We cystoscoped that patient. The bladder showed a few tubercles and ulcers around one ureteral orifice. What was the result? We catheterized that patient, we obtained tubercle bacilli from the one kidney. The other kidney was perfectly normal. I saw the patient some time ago and he seemed perfectly well.

Early diagnosis means this, that the diagnosis by the old policy of the general practitioner is at an end. You cannot afford to be a back number and refuse your patients the benefit of the latest and best methods of investigation whether you can make use of them or not. It is not expected that every one can make a perfect, a good radiograph. I do not know anything about taking radiographs personally. I do know that when we employ people who can take them, I can interpret them, but I do not know the technic—I do not know it in detail, in a general way I do, of course.

In regard to the point that was brought up by Dr. Cassidy of uric acid stone. I had a case in the last few weeks, a gentleman sent to me on account of repeated renal colics. We looked at that X-ray and could not see any shadow and yet we had the typical history of rena calculi from the patient. There are five or six causes of renal colic besides stone. By using one of the methods that was mentioned by Dr. Cassidy, by passing the shadowgraph catheter up there we made the shadow a little more intense, we got a beautiful shadow of a typical stone at that location and by the other method he mentions, viz., the collargol, we intensified it. He mentions the fact that collargol may be absorbed by the stone, which has come to be a very valuable addition to our knowledge. I can remember cases myself where I am positive the patients had stones and yet the X-ray did not show them, and if we only had had the method of adding the collargol to the stone it would have shown up distinctly.

In regard to the dangers of collargol that is all exaggerated. I know there have been dangers, that there have been deaths before we knew scientifically how to employ it. In the animal, we figured out the technic absolutely. We made three series of experiments. We injected collargol at a pressure of thirty millimeters; in other words, about three feet above the table. We examined the lungs, liver, spleen, everything in that animal; we found just a few drops of collargol in between the tubules and you would have to hunt in a great many cases to find them. The moment we raised the pressure to sixty or ninety millimeters, about the ordinary pressure from the syringe, that collargol would be found among the tubules and some in the lungs. When we raised it to 120, about all the pressure you can put on, collargol was forced into the tubules and between the tubules, into the lungs, liver, spleen, and that animal died in four or five minutes. If I can find one of the pictures here, a colored lantern slide, of such a lung, you can almost watch it, the lung turns absolutely black from the collargol.

In regard to the case Dr. Robbins spoke of, the double kidney: I lost the case for this reason. She had been operated on originally for extreme sepsis. I simply drained the first time, she was so thoroughly septic. The second time, when her sepsis recurred, I made up my mind to take out that kidney. When I got in and found this big hydronephrotic sac, I thought I had the entire kidney but I only had the lower half. I had omitted making a pyolograph, which I regret to this day. It was not until I brought that kidney out to the surface that I discovered that we were dealing with a double kidney, one on top of the other, and then I ligated what I thought were all the vessels, but I had missed an anomalous set and hemorrhage into the peritoneal cavity through a tear had occurred. If I had known there were two sets of vessels to this kidney, I would have found and ligated them.

Now, in regard to diagnosis of tuberculosis of kidney; Dr. Robbins wanted to know how I made my diagnosis. In that particular case, I made my diagnosis from two facts. In the first place, a girl of twenty complained of dull, aching pain over the kidneys, there was much pallor, evening temperature of 99 to 100 degress, X-rays negative, cultures of the urine negative. That is the points that I tried to bring out before; whenever you have a patient with these definite symptoms of kidney lesion and you cannot find anything in the cultures, the cultures are negative, one should then think of tuberculosis. Secondly; when the cystoscopic examination was made, the one ureter looked perfectly normal, the other one stood right out like an edematous surface, right into the bladder wall, but without any ulcerations. However, that was enough to show me that there was some form of infection going on in that one kidney and from that and finding the tubercle bacilli in the urine, I made the diagnosis.

RECENT IDEAS CONCERNING INFECTION AND IMMUNITY.*

V. C. VAUGHAN, SR., M.D.
ANN ARBOR, MICH.

In order to be brief it will be necessary for me to speak somewhat dogmatically concerning the recent views concerning infection and immunity.

I may say that about two years ago Doerr of Vienna, who is the most conscientious and vigorous and reasonable opponent of the theories which I am going to give you, closed a long discussion of these theories by giving a Scotch verdict: "That they were reasonable but not proven." The last paper that he has written some one hundred and twenty pages long, and which has appeared only a few months ago—in this he says that they are true in part, so you must bear in mind that what I am going to say is at least true in part.

First, bacteria are not plants. All our text books and all of our teachers say bacteria are vegetable organisms. Now, of course, whether they are vegetable organisms or not depends upon your definition of a vegetable. We have always said that a vegetable organism is one which contains cellulose. Cellulose is the frame work of the vegetable organism. Now if this be the true distinction between vegetable and non-vegetable organisms, bacteria are not vegetable organisms. They contain no cellulose. They are purely proteins.

In the second place, there has been considerable discussion for the last twenty years as to whether bacteria are simple in structure or whether they are complicated in structure. Some say that bacteria are simple in structure. Now please bear in mind that structure can be of two kinds. There is the anatomical structure and the histological structure, and there is the chemical structure. Because bacteria are simple morphologically, it has been assumed—a pure assumption, absolutely, with no foundation in experiment whatever—that bacteria are of

*Delivered before Section on Medicine 50th Annual Meeting M.S.M.S. Grand Rapids, Sept. 1, 1915.

simple chemical composition. Now bacteria are not of simple composition: This there can be no doubt about; it has been worked out in various laboratories, and it is a point of great importance in considering the nature of infection. The bacterial cell is just as complicated as any cell in our own bodies. Morphologically and microscopically the bacterial cell is of course, unicellular, and that places it low in the scale of existence. Chemically it is just as complicated as the cells of the highest structures of the body. It contains just as many amino-acids, the same animo-acids, it contains the nuclein group with the same nuclein bases; it contains at least two carbohydrates arranged very much as they are in the cells of our own bodies. Now I say that this is a matter of importance because it shows that the contest between the bacterial cell and the body cell is on a pretty even footing; it is not a more complicated cell of the body overcoming the less complicated bacterial cell.

In the third place, there has been some discussion as to whether bacteria contain nuclein or whether they are nucleated substances. I think there is no doubt about the final answer that has been given to this. There is no differentiation in staining the cells for their nuclei; some say, therefore, they have no nuclei; others say—and with these others I agree—bacteria are *all* nuclei. Now I do not mean to say that there may not be an envelope—there may not be substances accumulated about the bacteria forming capsules, etc., but bacteria are essentially wholly nuclei. They take the nuclear stains just as the nuclei of differentiated cells take the stains, and they take them uniformly. Besides, the chemical analysis shows that they are composed of nuclein, because nucleic acid and the xanthin bases can be obtained from it. This is a matter of importance, because the chief function of the bacterial cell, or any other unicellular organism is to multiply, and multiplication takes place in the nuclei in nucleated tissue not in the separate nucleus, but all nuclei.

The growth of bacteria in the body does not directly cause the symptoms or lesions of the disease. You and I were taught, or at least I taught a great many of you, that the typhoid bacilli eat holes in the intestines, dig ulcers, etc., and the very interesting subject that Dr. Mix has been talking to you about so very interestingly and valuably and practically is an illustration. We used to think, did we not, that bacteria on the surface of the mucus membrane of the stomach, or the duodenum, collected for some reason and grew there and made ulcers. Now I think I understood Dr. Mix to say; anyhow, I believe that it is generally admitted, that the infection which starts the ulcer is not from the surface, but by infection throughout the blood; and another thing, duodenal and stomach ulcers can be caused by dead bacteria just as well as by living bacteria; and another thing, ulcers may be caused by other poisons than bacterial poisons. I remember, years ago, when I found in a case of arsenical poisoning a beautiful arsenical ulcer in the stomach. I said, "Why, a piece of undissolved arsenic lay on the stomach in this locality and corroded, and made this ulcer," but experiments showed me that the injection of arsenic into the blood vessel of an animal could produce gastric ulcer just as well, and indeed more frequently than administration by mouth. It is, I think—now upon this point I may be stating it too strongly—but I think it is a biological law that when a poison finds its way or is introduced into the blood or lymph, the tendency is to eliminate it into the intestinal canal, or through the skin or through the kidneys. If you give morphine hypodermically it passes into the stomach, it is reabsorbed, it again passes into the stomach. You give arsenic hypodermically, and it passes into the stomach and intestines; you inject any foreign protein—egg white—under the skin, or into the blood of an animal, and it appears within a very short time in the intestines—it is poured out there, that is a place for it to be digested, and under normal or natural conditions it is digested there, and then its digested particles absorbed. You can administer to a rabbit, hypodermically or intravenously, any amount of foreign protein, and after a few hours, after the protein has disappeared wholly from the blood, you can find it abundantly, in the bile, in the intestines and often in the skin. It is, therefore, the elimination of poisons from the blood into the alimentary canal which is more likely to cause gastric and duodenal ulcers than being infected through the surface—whether the latter ever occurs or not. You can produce a beautiful dysentery in an animal by injecting proteins into the blood—not giving it by the mouth or injecting it into the alimentary canal, but by injecting it into the blood, because it is eliminated through the intestinal walls. One of the big problems in the near future is to find out what parts of the alimentary canal are most concerned in the elimination of different poisons.

As I stated a moment ago, it is not directly

the growth and multiplication of bacteria in the body that cause the infectious diseases. Now understand—directly—because when one becomes infected—if you or I or anybody else drinks today—suppose we should swallow intentionally a culture of typhoid bacilli, we would not have typhoid fever to-day, would we, nor tomorrow; it would be somewhere from six to ten days until we had typhoid fever. During that time the typhoid bacilli would be multiplying in our bodies with fearful rapidity, would they not, and still we are well—we have no sensation of being ill at all, when the bacteria are multiplying in our bodies with almost unlimited rapidity. Or, if you want to make this more clear, take a culture of the colon bacilli and inject it into abdominal cavity of a guinea pig, and from time to time, with a sterilized needle draw out fluid from the body of the guinea pig, and you will find that the bacilli that you have injected are multiplying greatly. While the drop taken out at first may contain a few bacilli, after fifteen minutes, more, after an hour a hundred times as many, and so on; still the guinea pig is not sick. The same is true of man; the man is not sick until the period of incubation is over. The period of incubation occurs in every infectious disease. There are no symptoms during the period of incubation. Now I do not mean to say that there are not changes taking place in the body during the period of incubation, but if so we have no methods of recognizing them. The man is not ill until the body is sensitized and begins to break up the invading bacilli—then the disease begins. It is the sensitization of the body and the destruction of the invading organisms by the ferments formed in the body cells that cause the symptoms and the lesions of disease. Of course, indirectly the growth of the bacilli is responsible, but if the white of egg could grow and multiply in your body it would be just as deadly as the tetanus bacillus to prick your finger with a needle moistened with white of egg.

Now you may say these statements are rather strong, and are at variance with our general belief. Take two guinea pigs; inoculate one of them with a virulent living culture of the colon bacillus; inject into its companion the dead colon bacillus—of course you have got to inject more in the latter case, because it won't grow—but if you inject enough of the dead bacillus the animal has the same symptoms, will die in a quicker time, and shows exactly the same lesions as with the living bacillus. Again—I was so deeply interested in Dr. Mix's statements that I may be drawing frequent conclusions from the subject he talked about—take pyorrhea for instance; it is not necessary that the germs from a pus cavity in the mouth be alive; they may be dead, but there you have a protein poison almost constantly being poured into the blood and circulation, haven't you. They may not be alive; they may be dead—but it is a poison. Every case of pyorrhea is a case of the constant introduction of poison into the system, and this poison is eliminated, whether it be dead or live bacteria, and may cause gastric ulcer or duodenal ulcer, or may cause something else.

Now, a very important thing, when a foreign protein is introduced into the body, the body cells learn how to digest it and dispose of it. I laugh and tell my students that everything in this world that is alive, from a unicellular organism up to a Daniel Webster may be educated, except a thick headed boy; but one of the most interesting things that has been learned in recent investigations is that the cells of the body may be trained to do a great many things at least that they do not do naturally. We take the vaccine of smallpox, we scratch that into the child's arm—it is the same protein which causes smallpox, but modified so that it does not grow so rapidly and abundantly—and the body cells learn how to digest smallpox proteins. We take the dead typhoid bacilli and inject them into the tissue, and the body cells learn how to digest typhoid bacilli, so that in after years when the child that has been vaccinated is again exposed to smallpox, he is immune, because he has ready prepared ferments which will destroy the vaccine protein before it has time to grow and multiply, and the same thing with the typhoid.

Now I have been asked several times whether this justifies the use of vaccines in treatment of disease, and I have been quoted quite largely as opposing the use of vaccines in the treatment of disease, and I am glad to have the opportunity to say that I do preach caution in the use of vaccines, but I think the theory which I have been trying to elaborate to you shows and justifies the use of vaccines under proper conditions, and with proper precautions. For instance, wherever there is local trouble, or trouble confined largely to one tissue of the body, such as acne, I can readily understand that the injection of some of these germs which are causing the acne under the skin or into the blood may stimulate the body cells to the formation of a ferment which is diffusable, which will diffuse into the acne pustules, and into the

skin. The acne being in the skin is not touched by the blood; the person is not sensitized. If this be true, then the possibility of vaccine therapy is—no man can say how great. I have labored earnestly for a great many years to separate the sensitizing or vaccinating substance from the poisonous substance in bacteria. I have had just enough success—just those will-o'-th'-wisps that keep a man moving on and on without reaching any great degree of success. In some cases the sensitizing substance can be isolated, but as a rule I have been unable to do it. I look forward with hope still to the time when the vaccinating or sensitizing substances can be separated from the poisonous substances, and that vaccination might be of benefit.

Take, for instance, the treatment of tuberculosis. The tubercle bacillus can be easily separated into its poisonous and its sensitizing parts. You can take the sensitizing part, which is non-poisonous absolutely; you can use any amount of it you want. I have injected a gram of it into a guinea pig without any possible harm to the pig, but, so far as guinea pigs at least are concerned it does not give any immunity. You can take the poisonous part, which corresponds with tuberculin, and with that, you can establish a certain amount of tolerance, but it is only very little. I have sacrificed—I think it is no exaggeration to say—at least a thousand guinea pigs, attempting to immunize them to tuberculosis in every conceivable way. Time and again I have taken lots, sometimes small and sometimes big, of guinea pigs, inoculated with the tubercle bacillus, and have treated half of them with tuberculin and the other half with no treatment, and, taking a set of any size, it never has happened otherwise than that the treated pigs died first, and had the more extensive tuberculosis. (laughter). Now you can see I am not very enthusiastic about the use of tuberculin. I do not deny that there may be some value in establishing a certain amount of tolerance, and when we realize how poisonous some of these protein poisons are—why, I think most of you know me and will trust my veracity, but I am going to give it a fearful strain—you can prepare from one gram of casein, as I have done repeatedly, from fifteen and a fraction grains of casein, enough poison to kill eight hundred guinea pigs, injected intravenously. Now we are drinking milk all the while, and still the casein contains a poison which is in fact a poison, when one gram of casein will furnish enough to kill eight hundred guinea pigs. Of course the explanation why we are not poisoned by proteins—that is simple—all proteins, so far as we know, contain poisons too. In my own laboratory I believe the first work was done along that line. We found that pathogenic bacteria contained a poison, and then we thought we would try non-pathogenic bacteria, and we found that they contained just as much poison—just as much as the anthrax bacillus; then we tried proteids such as the albumen from the blood, and it was the same there, and then we did not know but what our Battle Creek friends were right, and that we ought to eat vegetable proteins, and we tried them, and found that they contained just as much poison, (laughter) so that it seems that all proteins contain a poisonous group.

Of course it is perfectly plain why we are not poisoned when we eat them; there are two very good reasons: In the first place, from the unbroken alimentary canal protein poisons are not absorbed, so that you might swallow any amount. And in the second place, the intestinal and alimentary digestion splits up the poisonous substance and forms inert and harmless substances out of them.

Now if what I have said be true, we will sometime soon be speaking in a general way of the albuminal diseases, and by that we would mean diseases where for any reason a foreign protein gets into the body—not into the alimentary canal, but into the body. Then we would have under albuminal diseases, of course, bacterial diseases, protozoal diseases and albuminal diseases, due to absorption from the alimentary canal, etc. This is the later tendency in the study of infectious diseases, which is coming out now a little more prominently than it has in the past.

OBSTETRICS FROM A MODERN VIEW POINT.

ALEXANDER MACKENZIE CAMPBELL, M.D., F.A.C.S.

GRAND RAPIDS, MICH.

The object of this paper is to draw attention to the fact that the modern obstetrician has many duties and responsibilities which were not in evidence a few decades ago, and at the same time to make a plea for better and broader obstetrics, especially in its relation to the woman during the period of gestation. I desire to place obstetrics in its proper setting in relation to the other branches of the medical sciences, and to demonstrate what a broad and fascinating field of preventive medicine presents itself

to the practitioner who approaches it from the modern viewpoint and in a scientific manner.

There have been many obstetrical cases since the first mother was delivered of her first child and man has had unlimited opportunity to observe the various phases of pregnancy and parturition in the human family as well as in the lower animals. Yet, there is probably no branch of medicine that is veiled in greater mystery than are some of the phenomena incident to the pregnant condition.

The ancient Greeks were attended by women, as were the Egyptians and Hebrews. Gods and men were only called when grave conditions arose, as when Apollo rescued the infant Aesculapius Cesarean Section being performed on the dying mother.

It is known from the early history of obstetrics that the Roman obstetricians, pupils of Hippocrates, were not familiar with the pains of labor and the instinctive or voluntary exertions of the mother; or, if they were familiar with these, theoretically they attached no value to them. The child itself was considered to have performed the labor of birth, and by his pushing forward produced the strong pains and the unrest of the mother. According to Hippocrates, it was the demand of the child for nourishment which the mother could no longer supply, which led the child to active performance. With curious strength he tore the membranes and was born by his own muscular power. The birth pain of the mother was caused by stretching of the genital organs due to the powerful exertions of the child. The followers of Hippocrates considered the vertex presentation as the only normal one and for any other position they carried out the dismembering operation with quite a complete technic.

Six hundred years later, Galen revolutionized these ideas concerning labor. He considered that the cause of the beginning of labor was ripeness of the child; he described the contractions of the body of the uterus and the dilatation of the cervix; he directed the midwife not to allow the mother to arise and sit on the "birth chair" until the os was large enough to permit the passage of the child. He considered that after the dilatation of the os it was not the work of the uterus, but that of the abdominal muscles as in urination and defecation. He instructed the midwife to keep track of the dilatation of the os by palpation. It is proven that Galen rejected the whole theory of Hippocrates, and by his animal dissections became familiar with the muscular nature of the uterus, and even differentiated transverse and longitudinal muscle bundles and the physiology of each.

This great advance in the knowledge of obstetrics was lost sight of at the time of the fall of the Roman Empire. People fell back to the old ideas of Hippocrates and it was as late as the eighteenth century before the worth of the contractions of the uterus and abdominal muscles began again to be appreciated. Galen stood out as the greatest physician and scientist of antiquity, and many centuries earlier than his colleagues he interpreted the phenomena of labor with wonderful accuracy.

The first indication of the development of obstetrics toward a place among the sciences was noted in the sixteenth century. The practice of midwifery was, for the most part, in the hands of women even after that period. A great impulse was given to the progress of obstetrics by the famous surgeon, Ambrose Pare, about the middle of the sixteenth century. From this time the doctors, and especially the surgeons, became interested in this work.

After the middle of the seventeenth century physicians began to publish reports of their interesting cases. In the early part of the eighteenth century women still did a great deal of this work but people who could afford it began to employ doctors. About the middle of the eighteenth century chairs of medicine for the study of obstetrics were established in Edinburgh and Strasburg. In 1726, symphisiotomy was instituted and about the same time the induction of premature labor was first practiced. In the nineteenth century every advance in the related sciences was applied to obstetrics but the two epochal achievements of this period were the abolition of the pains of labor and the arrest of the high mortality from puerperal fever. In 1849, Sir J. Y. Simpson put a patient to sleep with ether. Seeing that the uterine contractions continued, though the attendant pain was abolished, he proceeded to give ether in normal labor and, in November, 1847, he demonstrated the value of chloroform.

Semelweiss, an assistant in the maternity hospital in Vienna, observed that from 10 to 30 per cent. of the puerperal women died. He noted that the mortality was higher in the wards allotted to the teaching of students than in those set apart for the training of nurses. In 1847, he saw the postmortem of a young colleague who had died from a poisoned wound and the pathological appearance seemed the same as those of the woman who died of puerperal fever. He ordered that every student

should use a disinfectant of chloride of lime on the hands before attending a woman in labor. Twenty years later Lister's remarkable work in antiseptic surgery was soon followed by the application of the same principles in obstetrics.

Probably the most discussed recent achievement in obstetrics from the standpoint of the expectant mother has been the introduction of "Daemmerschlaf," or "Twilight-Sleep," when the memory of all pain, and much of the actual pain of labor, is presumably obliterated. Practically the only new thing about "Twilight-Sleep" is the memory test which is used as an index to the administration of scopolomin, and the administration of a stable and standardized preparation of the drug in proper dosage, for this drug has been employed by obstetricians and surgeons for many years.

It is obvious that in every community there will always be a certain amount of obstetrical work done, for the expectant mother is ever in our midst. Schwartz states that more than nine-tenths of pregnant women in the United States receive no prenatal care, that more than 40 per cent. of all confinements are attended by obstetricians who are not qualified to give to parturient women a full share of the safety and comforts which modern obstetrics makes possible, which ought to be the birthright of every expectant mother and every unborn child. Schwartz also states that the same or worse conditions exist the world over and that in the United States conditions are improving more rapidly than in other countries; he claims that if we were to abolish the midwife entirely without improving the training of the doctors conditions would not be materially improved.

A study of the causes of infant mortality has shown that the greatest number of infants dying under one year do not live one month, and that in many cases the causes producing this death rate are in operation before the birth of the child.

A few years ago, in the larger cities, an organized effort was made to instruct women in the hygiene of pregnancy and it seems to me that this campaign of education of expectant mothers has many possibilities and should receive the encouragement and support of every member of the medical profession.

J. Whittridge Williams has recently given statistics gathered from 10,000 mothers who came under observation in connection with the Johns Hopkins Hospital. He found that 26 per cent. of the foetal deaths were due to syphilis, while the mortality of the various toxemias were only 6.5 per cent. In the face of these statistics it is obvious that the prenatal care of a mother must cover a much wider field than that of toxemias alone. He urges that syphilis must be recognized in the mother at the earliest possible moment so that appropriate anti-syphilitic treatment can be administered. The dosage should be sufficient so that it will be transmitted to the child and a cure effected. Inasmuch as only one-fourth of the syphilitic women present observable lesions during pregnancy, the remaining three-fourths of these cases cannot be determined by ordinary examination until the dead born child shows it, or until the living child develops hereditary syphilis. Theoretically every pregnant woman should have an early Wassermann made. Williams accentuates the fact that the problem of prenatal care should have a wider field and should be under the auspices of a well regulated obstetrical department to which are attached trained obstetricians and trained social workers.

Women should be educated to consult the obstetrician just as soon as there is any reasonable evidence of the existence of pregnancy and it is at this first point of contact with the mother that the duties of the obstetrician begin. These duties must continue throughout gestation, labor, and the puerperium. A complete history should be taken and a special obstetrical record has many advantages. A thorough gynecological examination should be made to exclude ectopic pregnancy and other abnormal conditions, a pelvicetric examination should be made; blood pressure recorded; urine and blood thoroughly examined. The expectant mother should be required to report in person to the obstetrician every month during the first half of pregnancy, and more frequently during the latter half; complete records should be made of blood pressure, weight, and urinary findings. Printed directions should be given concerning diet, exercise, bathing, clothing, regulation of the bowels, sexual intercourse, care of the teeth, railroad journeys, and so forth. At the first interview I give the patient a typewritten list of directions, assuring her that ordinarily no serious accident need befall her during the period of gestation.

I insist on my obstetrical patients coming to me every month, when the blood pressure and weight are taken, the urine examined, and physical examination made if considered necessary. About six weeks before the time of expected delivery a thorough and final examination is made and an effort is made to determine by external palpation and foetometry the position and size of the foetus. Sometimes a va-

ginal examination is made. If there is any indication for it I see the patient as often as once or twice a week during the last six weeks of pregnancy.

Some excellent work has been done with the X-ray in determining the position and state of development of the foetus and a very good picture can be obtained during the last few months of pregnancy. The vertebral column, head, limbs, hands and feet can be shown. I believe that it is not at all improbable that the X-ray in the future will become a valuable diagnostic aid, especially during the later part of pregnancy.

It is a great satisfaction to be able to assure one's patient that she herself is in proper physical condition to undergo the ordeal of labor, that the position of the child is satisfactory, that its heart action is normal, and that there is no probable disproportion between the child's size and the maternal parts. If these ideal conditions are not present it certainly is the duty of the obstetrician to acquaint himself with the abnormal conditions so that he can intelligently decide upon a mode of procedure.

The early diagnosis of pregnancy is desirable. When a woman, whether married or not, gives a history of sudden cessation of menstruation it should be assumed that she is pregnant until it can be proven positively that she is not. As one's experience in obstetrical work increases the wisdom of this assumption gains greater proportion. One of the earliest physical signs noted is Hegar's which, as is well known, is detected by external and internal palpation and is based upon the fact that in early pregnancy the lower uterine segment and supra vaginal portion of the cervix are soft and elastic. The extent of this, however, may differ in women of different nationalities. I must confess that I have rarely been absolutely positive of the existence of pregnancy by the use of Hegar's sign alone.

Foetal movements may be detected as early as the third month but are not to be entirely depended upon for women who are not pregnant will affirm that they feel foetal movements, and many women advanced in pregnancy will deny the existence of them. It is said that foetal heart may be detected between the fourth and the fifth months; personally, I have noted it as early as the fifth month.

So far as I have observed Abderhalden's serum test for the diagnosis of pregnancy is still open to criticism, because it is positive in other conditions than pregnancy and I see no occasion for revising the opinion expressed by me to that effect in a former review of the subject. Engelhorn criticizes Abderhalden's method of diagnosis. He describes a cutaneous reaction which he has noted during pregnancy corresponding to von Pirquet's tubercular reaction. He uses an extract of placental tissue which he calls "Placentin." This reaction is distinct after thirty-six hours and causes a redness at the point of injection and a light brown pigmentation of the surrounding parts. He states that he can make a positive diagnosis of pregnancy as early as the seventh week. Such a test if dependable would be a valuable adjunct in the early diagnosis of pregnancy.

Esch has made use of a placental juice which he claims gives a skin reaction causing redness and swelling in twenty-four hours.

Blood Pressure.—The study of the blood pressure in pregnancy has been interesting and instructive. There has been a common impression that pregnancy causes an increase of blood pressure; this, is not, generally speaking, a fact as has been brought out by many observers. Lynch has shown that the normal blood pressure during pregnancy is about 105 mm. HG., with variations approximately between 75 mm. and 145mm. There may be a gradual rise during the last two months of pregnancy and some recession during the last week. There is no question but that, accompanying toxemia, there is in the majority of cases a marked hyper tension and the recognition of this hyper tension. should put the obstetrician on his guard.

Vaquez, writing in 1907, after ten years experience with blood pressure, states that when a blood pressure is very high convulsions will follow, claiming that eclampsia never occurs in cases of normal tension. There are cases on record, however, of extremely high blood pressure in pregnancy with no evidences of toxemia; on the other hand eclampsia may develop and produce death in cases where the blood pressure is normal. Lynch has drawn attention to the association of low blood pressure and shock following labor. This is undoubtedly an important and significant fact. Apparently two types of low blood pressure exist, one of which seems compatible with good health, while the other generally follows some acute infection or develops during the early phthisis. A short time after reading Lynch's article a pregnant woman came under my observation in whom the systolic blood pressure was persistently from 85 to 90 mm. HG. This woman had been advised by a physician that on account of the weakness of her heart she should have her labor induced. She had had two children and one

ectopic pregnancy. Her last child was still born. This patient was kept under very close observation during the entire period of gestation, and during this time the blood pressure remained constantly low. Realizing that with this low blood pressure she might be unable to endure the strain of a hard labor, she was promised that when the period of gestation was ended labor would be induced. On the 280th day accouchement force was performed under nitrous oxide and she was delivered of a living child. There was no post partem hemorrhage but the patient went into profound shock as soon as the child was born and it required most heroic stimulation to restore her. She remained in a condition of shock for several hours after the baby was born, but made an excellent recovery. Lynch has stated to me that he is more and more convinced that low blood pressure in pregnancy is indicative of a weakened ability to withstand the strain of parturition. It is of extreme importance that the blood pressure of a pregnant woman should be taken at frequent intervals and I am convinced that an extremely low blood pressure, or a blood pressure which exceeds 140 mm. in a pregnant woman, should be interpreted as a cause of considerable solicitation on the part of the obstetrician.

Tuberculosis in Pregnancy.—The concensus of opinion is that no woman with an active tuberculosis should give birth to a child. In pregnancy under normal conditions all the vital organs of the body are more or less overworked and very frequently, under normal conditions, a healthy woman will be considerably invalidated after a normal labor and puerperium.

The first few months after the birth of a child is a critical time for the mother. Every obstetrician has observed pregnant women who are tubercular who apparently keep in good condition during the period of gestation, but whose condition becomes progressively worse after the puerperium. The added demands on the organism due to pregnancy and labor have an invariable tendency to light up arrested tubercular conditions and aggravate existing ones. Furthermore a child should not nurse a tubercular mother and a high percentage of these infants die a short time after birth, and a high percentage of them never reach maturity. I take a positive stand on this question and believe that a pregnant woman who is tubercular should have pregnancy terminated just as soon as the tuberculosis is diagnosed. Furthermore a woman should have a recovery extending over at least five years before she should be advised to become pregnant. A number of cases in my own experience have forced me to this radical conclusion.

Exophthalmic Goitre.—Charcot and Kocher have ascribed to pregnancy a salutary effect upon exophthalmic goitre, but many other authorities of large experience consider the combination of the two conditions as very unfavorable. Graves disease is about eight times as common in women as in men, and while it is a fact that a woman with exophthalmic goitre is not particularly liable to become pregnant, yet such cases must occur in the practice of every obstetrician who is able to diagnose Graves disease at any early period. Recently Bernard von Beck has added a contribution based upon an unusually large amount of material. He claims that pregnancy causes an increased demand upon the thyroid, and that until the thyroid gland has become accustomed to this increase, there exist disturbances in the function of the gland which cause subjective symptoms in the first two to four months of gestation. Patients with Graves disease, whose thyroids have already been functionating excessively before conception occurred, improve subjectively during pregnancy. He claims that this is due chiefly to the absence of the menstrual cycle. Von Beck states that only during the earlier months of pregnancy when the nervous symptoms rapidly and persistently increase, should strumectomy be done. Subjective improvement usually occurs after the fifth month of pregnancy and labor is uncomplicated. In 260 cases of Graves disease in pregnancy von Beck only performed thyroidectomy in five cases, and did not interrupt pregnancy in any case.

Seitz has collected 112 cases from his own material, from literature and from circular letters. He found that the manifestations of hyperthyroidism were not affected in 40 per cent. of the cases, that a very small number even improved during pregnancy, but that about 60 per cent. were made distinctly worse by gestation. Seitz, like other observers, considers the effect upon the heart as the greatest danger. He lays great stress upon dietetic and hygienic regime, by which the greater part of the cases can be kept in fairly good condition. He considers expectant treatment as advisable during the first part of pregnancy, and only if subjective and objective symptoms grow progressively worse does he advise pregnancy to be terminated.

Supra Renal Insufficiency in Pregnancy.—It has been stated by Pedro Zuloaga that symptoms of grave supra renal insufficiency may

show themselves during pregnancy or labor. It may begin before pregnancy occurs and increases afterwards; or it may occur for the first time during pregnancy. This insufficiency of the supra renals may be produced by a villo toxemia or they may be congenitally deficient. The insufficiency may be acquired before pregnancy, which is quite compatible with good health until the added strain of pregnancy arises. Symptoms may occur as a result of the failure of the supra renals. The symptoms are asthenia, lumbo-abdominal pains, vomiting, constipation, diarrhoea, brain symptoms, and progressive cachexia and emaciation. Low blood pressure, tachycardia, and collapse may end the scene. If the diagnosis is made early opotherapy may be of benefit. Intractable vomiting may result from this condition. Zuloaga states that some cases of sudden death in pregnant women may be caused in this way. Every pregnant woman should have her arterial tension measured. Opotherapy is indicated in the treatment of these cases, and the fresh gland or adrenalin should be given. If these fail labor should be induced. Zuloaga thinks that a woman with supra-renal insufficiency should be advised to avoid pregnancy just as tubercular cases are.

The Toxemias of Pregnancy.—No subject within the field of obstetrics is of more interest or importance than that of the toxemias of pregnancy. The literature on this subject is extensive and many ingenious and intricate theories as to the cause of the condition have been advanced, but as yet the solution of the problem remains to the future. The majority of the writers are agreed that the etiological factor, whether of foetal or material origin, is identical for the toxemias of early pregnancy as well as those occurring late in its course. The difference is probably one of time and severity of toxemia, as well as extent of morbid changes resulting. An interesting theory has been advanced as to the etiology by Mayer, A. and Linser. They consider that certain toxic substances, originating from the placenta, enter the maternal circulation during pregnancy. These substances act as antigens, and are neutralized by the production of antibodies in normal cases. In some cases these antibodies are not produced, or produced in inadequate amounts, and the patient suffers from an autointoxication as evidenced by various degrees of vomiting, skin lesions, or eclampsia. Thus we may find toxic symptoms in early pregnancy disappearing later on as sufficient antibodies are found to untie with the antigens. The validity of this theory is as yet unproven and whether the choronic villae or placenta produce such an antigen is yet to be definitely decided.

From these numerous investigations, however, some practical results have been obtained. All cases of early toxemia should receive careful attention and treatment. Hyperemesis, except in the mildest form, should be considered a very serious condition; the patient should be confined to bed, and if possible all members of the family should be excluded from the room. All food by mouth should be withdrawn and nutrient enamata resorted to. Lynch has advised the use of large doses of bromide per rectum until the patient is thoroughly quited down. Normal salt solution may be given by rectum, glucose and sodium bicarbonate may be given in large doses in the form of an enema, though the utility of this procedure is questionable. Therapeutic suggestion is particularly applicable in these cases and one should impress upon the patient the gravity of interrupting pregnancy; Williams strongly advocates this method. If the vomiting ceases solid food may be resumed but no liquids should be given by mouth at this time. A large number of these cases respond to this form of treatment and these cases are classified by Williams as the neurotic type. On the other hand, if the vomiting does not cease after such careful treatment for a few days, the safest procedure is to empty the uterus as rapidly as possible for the probability is that the case is one of the true toxic type. In this type the vomiting is progressive and mental symptoms, jaundice, and vomiting of blood occur. With these symptoms well established it is frequently of but little avail to empty the uterus. The so-called reflex type of vomiting is probably a form of the neurotic type and the correction of anatomical defects cures these cases, oftentimes by suggestion. To this class of cases I am strongly tempted to include those relieved by transfusion or by the injection of the serum of a normal pregnant woman, considering the relief obtained to be due mostly to the suggestive influences of the procedure (Cases of C. K. Austin, Arthur Curtis, and many others). Unfortunately examination of the urine by ordinary methods is of little avail as many cases present no abnormality except possibly a small amount of albumen and a few casts. Williams lays great stress on the ammonia coefficient of the urine as a diagnostic point between the neurotic and toxic type of vomiting, claiming it to be much higher in the latter. This coefficient cannot be estimated except in the well equipped laboratories and so

cannot be utilized by all, but when it is possible advantage should be taken of this procedure.

Eclampsia has been called by a number of writers a "disease of theories" and is a toxemia which may assume most serious proportions. Predomal symptoms are usually observed but its onset may be sudden and occur at any stage of gestation. Successful treatment of this condition requires the greatest judgment on the part of the obstetrician. The general concensus of opinion is that we have the same etiological factor here that we have in earlier toxemias, the difference being one of time, degree of toxemia, and extent and location of pathological changes. The majority of these cases show necrosis of liver cells and kidney epithelium, while various organs may be involved. In practically all of these cases large amounts of albumen are found in the urine.

Recently Hull and Rodenburg have made investigations on animals in an attempt to determine the etiological factors in eclampsia. They observed that the pathological changes, for the most part, center about the liver and kidneys. Their working hypothesis is that eclampsia is due to an excess in the maternal circulation of the products of digestion of foetal protein. From animal experimentation they believe that eclampsia develops in the following order: an overdose of foetal elements is thrown into the circulation and is autolized with the formation of an excess of lucin; the excess of lucin injures the hepatic vessels, with subsequent thrombosis, cloudy swelling, local necrosis, and more or less autolosis of the liver cells, the renal changes are probably due in part to other products of autolosis and perhaps to protein fractions incompletely broken down by the liver. It appears from their experiments that albuminuria is an important sign since severe renal degeneration seems to be the important lesion.

Sselitzcky agrees with Schmorl in his conception of eclampsia without convulsions, basing his conclusions on the anatomical changes in the internal organs. He states that eclampsia is not a disease of any special organ but of the organism as a whole. He reports the case of a woman 35 years of age who four years after a normal delivery, showed restlessness, disturbance of vision, twitching of the face muscles, and coma; the pulse reached 140, icterus appeared, a large quantity of albumin and different forms of casts were found in the urine, anuria ensued, and the patient died of anuria and oedemia of the lungs. Post mortem examination showed parenchymatous degeneration of the heart muscle, liver enlarged with necrotic foci, venous stasis, and oedema present, kidneys large and oedematous bloody transudate in the pleural and peritoneal cavities. Microscopically there was shown to be necrosis of brain tissue, heart muscle, kidney epithelium, liver cells and lung tissue; necrosis was also found in the mammary gland, pancreas, thyroid and interstitial of the uterus. Sselitzcky has collected fifty-one cases from the literature, thirty-four of whom died. He states that the treatment of eclampsia is rapid delivery and serum treatment.

Young states that eclampsia and the albuminuria of pregnancy are due to the products of early autolosis of the placenta and that toxemias are associated with recent infarctions of the placenta, that placental infarction is due to an interference with the maternal blood supply of the parts and that it has been shown that choronic elements depend upon the maternal blood supply. The interference of blood supply which causes the infarct may occur when there are no evidences of toxemia, that is in accidental hemorrhage. The placenta is constructed so that a part of it may die and the products liberated from the dying patch may pass into the blood stream. He says that this explains the cessation of symptoms after the death of the child and the separation of the placenta, also the absence of toxemia after accidental hemorrhage when the placenta is completely detached. Whatever may be the cause of eclampsia, treatment for it is, in the majority of instances, the prompt evacuation of the uterus, and it may be possible in some instances to save both mother and child.

In the preparation of this paper I have quoted extensively from the writings of Wichmann, Schwartz, Williams, Lynch and other authorities.

BIBLIOGRAPHY.

Wichmann, S. E. *Arch. de Gynaek.*, 1914, CII., p. 639.
Schwartz. *Am. Journ. of Obstetrics*, Vol. 69, 1914, 1 p. 370-378.
Engelhorn, E. & Wintz, H. *Munchen Med. Wochenschrift*, 1914, LXI., 689.
Williams, J. Whittredge. *Journ. Am. Med. Ass'n.*, Jan. 9, 1915, Vol., LXIV., No. 2, p. 95-101.
Lynch, Frank W. *Surgery, Gyn., & Obst.* 1913, vol. 17, p. 472.
Gellhorn, George. *Am. Jour. of Obst. & Diseases of Women and Children*, Vol. LXVIII., No. 6, 1913.
Von Beck, B. *Beitr. z. Klin. Chir.*, 1912, vol. LXXX., p. 73, (Gelhorn).
Seitz. *Trans., Deutsch Ges. of Gynae.*, 1913, Vol. 1, p. 213. (Gelhorn).
Zuloaga, Pedro. *Arch. Mens. d'Obst. et Gyn.*, May, 1914.

Hull and Rhodenburg. *Am. J. of Obst.*, 1914, Vol. 69, p. 919.
Young. Proc. Royal Soc. of Med., June 14, 1914.
Mayer, A. and Linser, P. *Munchen Med. Wochenschrift*, 1910, LVII., p. 2757.
Williams, J. Whittredge. *Jour. Obst. & Gynec. of British Empire*, London, 1912,, pp. 245-262. (2 ch.)
Sselitzcky. Festscrift f. Prof. Probedinsky, Moscow, 1914, *Abst. Surg., Gyn. & Obst.*, Vol. 19, p. 648, 1914.
Ewing. *Am. Jour. Med. Sciences*, 1910, Vol. 139, p. 829.
Ewing. *Am. Jour. of Obst.*, 1905, Vol. 51, p. 145.
Lynch, Frank W. *Jour. Mich. State Med. Soc.*, 1914, XIII., p. 459.
Smith, Richard R. *Jour. Mich. Med. Soc.*, May, 1914, p. 293.

OSTEOMA OF THE FRONTAL SINUS REPORT OF A CASE.*

V. A. CHAPMAN, M.D.
MUSKEGON, MICH.

Mrs. J. age 52 consulted me on May 14, 1908. She stated that she had been having headaches for three years, since having lagrippe. Had also had trouble with eyes for about three years. Procured spectacles two years ago. Vision is failing. Right eye painful and swollen—hurts her all the while.

Patient's vision in right eye was 20-50 and by continued effort to see test type card she read nearly 20-20. With +0.50 cylinder at 160° axis the vision of right eye was 20-20. Vision in left eye was 20-100 improved to nearly 20-20 by lenses.

Some enlargement of right supraorbital ridge region was apparently bearing down upon the right eye. Correction for refractive errors was prescribed and operation for relief of pressure against globe was advised. Patient would not consent to operation.

On January 23, 1909 patient again consulted me for relief. She stated that she had headache almost constantly and sometimes very severe. The vision was practically the same as at previous examination. The right globe was markedly protruding and displaced downwards and outwards. Opthalmoscopical examination showed the arteries small and veins congested. There was no pulsation and no bruit could be detected by use of stethoscope over the frontal region of skull. Patient was advised that there was some sort of tumor growing which was pushing the eyeball outwards. That the tumor was probably in the right frontal sinus.

Operation was again advised and patient would not consent. A prescription for iodid of potash was given. I did not see patient again until October 5, 1909. She then presented herself at my office with all the symptoms more marked. Some fluctuation was noticeable on palpation over the tumor. Fluctuation appearing at such a late period after the tumor was noticed puzzled me considerably and I modified my diagnosis to include a possible cyst of some kind. Operation was again advised and patient consented.

The operation was performed at Hackley Hospital—October 6, 1909—and a large, irregular nodulated ivory bone tumor was removed from the right frontal sinus. The tumor nested in the frontal sinus and by pressure erosion had caused a small perforation of the anterior bony wall. There was considerable milky white thickened mucus about it and it was this which caused the fluctuation upon palpation.

The tumor extended from near the external angular process of the frontal bone to nearly an inch past the median line; thus extending over into the left frontal sinus. A large projection of the tumor had pushed down into the ethmoid region beneath the nasal bones. The tumor had arisen by a short pedicle springing apparently from the diploe of the skull above the frontal sinus. I regret that more care was not taken at the time of operation to try to determine more definitely just what tissue the tumor did spring from. The stress of operation at that time however took the entire attention. The outer and inner tables of the skull were widely (½ in.) separated as far up as the hair line.

Patient six years after operation. No signs of recurrence.

This cavity was lined with a greyish glistening membrane and that portion not occupied by the tumor was filled with the milky white thick mucus before mentioned.

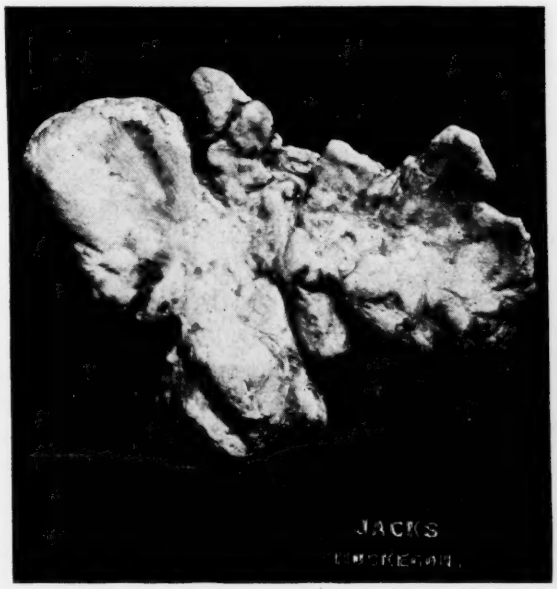
The anterior table of the skull over all this cavity area was removed and the soft tissues replaced against posterior table to prevent any retention pocket.

The tumor is of ivory density. It measures 59 millimeters in horizontal length 40 millimeters perpendicularly and about 30 millimeters in thickness. It weighs a little less than two ounces.

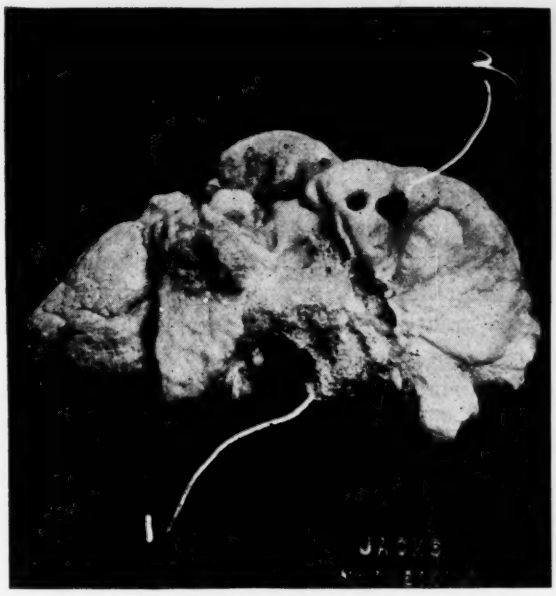
There is a thin layer of bone compressed in a fissure between the left projection of the tumor and its main body. This is the portion that extended over into the left frontal sinus.

*Read before Section on Ophthalmology and Oto-Laryngology, 50th Annual Meeting, M.S.M.S., Sept., 1915

Its appearance and position indicate that it is the remains of the septum between the right and left sinuses which the tumor probably perforated and enfolded. In the photographs, which are exact size, "1" points to site where attachment was chiseled away. "2" points to two holes which were drilled into the tumor after it was exposed, and before its removal, in an attempt to determine its nature.



Concave surface of tumor conforming to outer surface of inner table of the skull. Exact size.



Exact size of tumor. The projecting pyramidal portion at left of the deep perpendicular groove was in left frontal sinus. The groove contains remnants of the septum that was originally between the frontal sinuses.

Patient made an uneventful recovery and is here before you to-day. There has been no recurrence.

The photograph was taken with patient not wearing her spectacles as I wished to show the complete site of the operation even though greater deformity appears without the spectacles than with them.

Very little is to be found in the text books concerning osteoma of the frontal sinus. Indeed, one of the most recent works on accessory sinuses does not mention it at all. In looking up the literature upon this subject, very little was found to have been published in the American journals. Bibliography, and digest of some of the articles are appended.

PFEIFFER, W. Ein von Osteom und Mukozele des Sinus frontalis mit Perforation der zerebralen Wand. *Zeitschr. f. Ohrenheilk.*, 1912, lxiv., 223-236, 2 pl.

Pfeiffer, W. A case of osteoma and mucocele of the frontal sinus with perforation of the cerebral wall. *Zeitschr. f. Ohrenheilk.*, 1912, lxiv., 223-236.

Describes a case with operation and recovery.

External surface of tumor. Exact size. Note chisel marks above the line from 1 where pedicle attachment was cut through.

Says that Boenninghaus has collected 148 authentic cases of osteoma of the accessory sinuses. In the preantiseptic era the mortality was very high, but with the introduction of asepsis, improved operative technic, recognition of the fact that osteoma is an encapsulated tumor and the adoption of Volkmann's operation, the mortality has been greatly decreased. In Boenninghaus' collection the mortality for the cases operated before 1885 was 16 per cent.; for the cases operated since that time 3 per cent. Discusses the different theories of origin and concludes that they arise from a connective tissue rudiment, and are due to anomalies of development. Virchow believed that they originated from the diploe of the frontal bone.

ZUMHASCH, A. Osteom of the Frontal Sinus

(Zur Kenntnis der Stirnhohlenosteome). *Med. Klin.*, 1914, x., 1055.

Osteomata are among the most frequent new-growths of the frontal sinus. As a rule they are pedicled tumors. There are different views as to their origin. Arnold and Tillmann assume that they originate from fetal remnants of cartilage and Rokitansky believe that they are originally enchondromata that gradually ossify. Arnold bases his opinion on the demonstration of remnants of cartilage on the surface of the osteomata examined by him. His opinion is disputed by Bornhaupt, Sprengel, Zimmermann and Vischer. In spite of the most careful examination they could not find any cartilage remnants and think the tumors are of periosteal origin. The patients themselves often give trauma as the cause of the tumor. The fact that the osteomata are almost always found between the sixteenth and twentieth years—a time during which the frontal sinuses are developing—would lead us to suppose that they do develop from fetal remnants, and are not due to chance trauma. Pfeiffer thinks they develop from connective tissue and are connected with disturbances in development. They grow slowly in the direction of least resistance and may attain great size. Cases have been known (Dolbeau, Tillmann, Wieck) in which the pedicle of the osteoma became separated from the wall of the sinus and remained as a "dead osteoma." Tillmann thinks this due to pressure atrophy and suppuration. Inflammation may take place in an osteoma and change it to a mucocele, which may become infected and transformed into a pyocele.

Only treatment is surgical. The prognosis of radical removal of osteoma was formerly very bad. According to Berlin, of sixteen patients who were operated upon for osteoma of the sinus, six died, or 38 per cent. Bornhaupt had seven deaths in eleven operations, or 63 per cent.

According to Birch-Hirschfeld, Taranto, during the period from 1850 to 1874 had forty-three cases with eight deaths, or 18.6 per cent.; from 1875 to 1890, fifty-nine cases with four deaths, or 6.77 per cent. Giese had a mortality of 50 per cent. Birch-Hirschfield, according to recent statistics a mortality of 5.79 per cent. Perthes partially removed the tumor in twelve cases with six deaths, or 50 per cent., and of twenty-one case in which it was completely removed, two died, 9.5 per cent. The cases published in recent years by Kohler, Perthes, Vischer, Pfeiffer, Post, Manasse, Payr and others all show good results. They show that the operation can be performed now almost without danger. As long as the posterior wall of the sinus and the dura are intact there is little danger of meningitis.

WEINGARTNER. A latent osteoma of the frontal sinus. (Ein latentes Osteom der Stirnhohle). *Berl. Klin. Wchnschr.*, 1914, li, 1710.

Reports one case, patient had headache in region of frontal sinus. Rontgen examination of sinus showed the tumor. The only case the author knows of in which there were no pressure symptoms and diagnosis had to be made by X-ray.

BESSEL-HAGEN, F. Osteoma of the Frontal Sinus (Zur Kenntnis der Stirnhohlenosteome). *Centralbl. f. Chir.*, 1889, xvi., 900.

Describes one case operated upon in 1888 with success; recovery. Advises early and complete removal of these tumors.

BOENNINGHAUS. Operations on the Accessory Sinuses of the Nose. (Die Operationen an den Nebenhohlen der Nase). In Handbuch der speziellen *Chirurgie des Ohres* und der oberen *Luftwege*, Wursburg, 1914. 2d ed.

Pfeiffer evidently quoted from the first edition of this work for the figures I find in Boenninghaus do not agree with those given by Pfeiffer. In Vol. III, p. 234 of this edition Boenninghaus says that he has collected 203 cases of osteomata of the accessory sinuses. In 153 of them it could not be definitely determined in which sinus the tumor began. Of the others seventy-five were osteomata of the frontal sinus. He says that 129 of these cases are described in Taranto's Paris thesis, 1901. He also gives the references for the other cases. He says the origin of these tumors is not clear, but he is inclined to believe they originate from foetal cartilage. Says the prognosis has improved greatly. Of cases before 1885, there was 16 per cent. mortality. Since 1885 only 3 per cent. mortality. Death generally occurs, when it does occur, from intracranial complications, such as meningitis and brain abscess, and generally in cases where projections of the tumor reach into the cranium.

BORNHAUPT, T. A case of left-sided osteoma of the frontal sinus. (Ein Fall von linkseitigem Stirnhohlen-Osteom). *Arch. f. klin. Chir.*, 1881, xxvi, 589-644.

Describes one case of his own, operation, recovery. Collects twenty-two other cases from the literature. Discusses theories of origin and concludes that the correct one is that which assumes that the tumors originate from remnants of foetal cartilage.

GIESE, A. A case of osteoma of the left

frontal sinus and orbit. (Ein Fall von Osteom der linken Stirnhohle und Orbita). *Diss., Kiel*, 1902, Abstract in *Zentralbl. f. Chir.*, 1902, xxix, 1331.

Describes one case, operation, recovery. From collection of cases from literature concludes that prognosis of these tumors in general is bad. If left to themselves they often project into the skull and cause death from compression of the brain. Formerly operation gave very bad results. He reckons from the cases reported a mortality of 50 per cent. With early operation the prognosis is much better.

GERBER. Osteomata of the Frontal Sinus. (Les osteomes du sinus frontal). *Arch. internat. de laryngol.*, 1907, xxiii, 1-17.

Says there is a good deal of confusion in the designation of tumors of this region. Many exostoses of the orbit are called osteoma of the frontal sinus and vice versa. He thinks a case may be regarded as osteoma of the frontal sinus when there is propulsion of the eyeball forward, downward and outward. When the eyeball is pushed forward only the tumor is sphenoidal or orbital. He says that eighty-seven cases of true osteoma of the frontal sinus have been published. The authors are as follows: Arnold (2), Axenfeld, Baille, Banga, Berg (2), Besselhagen, Bonnet, Bjorken, Birch-Hirschfeld, Birkitt, Bornhaupt, Bouyer, Bryant, Bush, M. Coppez, H. Coppez (5), Demarquay, Fenger, Fergusson, Friedenberg, Gerber (2), Giese, Goyanes, Haenel, Hamilton (2), Heymann, Hoffman, Holland, Jobert, Ischunin, Kammerer, Kan, Kikuzi (2), Knapp (3), Lambe (2), Laurens, Lawrence, Liares, Mackenzie, van der Meer, Mitwalsky (2) Mierendorf, Moser, Nakel, Navratil, von Oettingen, Osterlen, Paget, Poppert, Potherat, Prochnow, Renzi, Roemhild, Rokitansky, Sauteran, Scames-Spicer, Solger, de Santi, Stanley-Bogd, Tauber, Textor, Thelvall, Tillais Tillmann, Tischow (2), Verneuil, Weiss, Williams, Witzheller, Zimmermann, Perthes, Hoppe and Hilton, and he adds in a foot-note that after the completion of his article another case was published by Perthes, making a total of eighty-eight. He excludes cases by Durnhofer, Funke, Grunhoff, Keate and Silook that are published as authentic cases in other lists. He also cites a number of other cases that he thinks are not authentic. He does not give the reference for these cases.

He describes two cases of his own.

There are various theories as to causation. One is that these tumors are caused by trauma, another that they are of embryonic origin, a third attributes them to defective development of the frontal sinuses caused by inflammation or some mechanical cause. His own conclusions with reference to etiology are as follows: The frontal sinuses have a marked tendency to become the seat of bone tumors, more than any other part of the skeleton. Most of these are small circumscribed exostoses, which are never perceived during life. Sometimes they develop into larger osteomata, generally solitary, more rarely multiple, which become dangerous on account of pressure. Inflammatory irritations that are capable of causing ossification of the bone or periosteum are not unusual in the frontal sinuses. These irritations may be exogenous (trauma), but more often they are internal, caused by latent, torpid sinusitis. These irritations have the maximum influence during the period of formation of the bone and during the development of the frontal sinuses. That is why most of the cases are found between 10 and 30 years of age. (My case was much later in life—52 years of age when she first sought relief from headaches).

The prognosis after operation is favorable.

KYLE, D. Braden. Text-book of Diseases of the Nose and Throat, Phila., 1914. p. 415.

"Osteomata are rather rare and may primarily originate in the sinus or in adjacent bony structures, involving the sinus. They tend to involve adjacent structures and to penetrate the cranium. This form of tumor is of very slow growth and if allowed to attain any considerable size produces marked facial deformity. Tumors of the frontal sinus, whether benign or malignant, are of grave import and the prognosis is unfavorable."

The following notes on this subject are contributed by Dr. Eames, Pathologist to Hackley Hospital:

ORBITAL OSTEOMATA.

Osteomata of the orbit may form either from the periosteum of the orbit, or extend from the sinuses.

Those from the orbit are firm, irregular, nodular tumors with a dense cortex and a cancellated center. Those from the sinuses are at first confined within the cavities from which they originate. As they grow, the walls of the sinus expand, the weakest place gives way and the tumor bulges into the nose or even into the cranial cavity. At this stage the tumor is surrounded by the walls of the sinus in which it develops.

They are formed of a cancellated center and a dense cortex covered by periosteum. Later the bony wall of the cavity may become eroded

and the tumor becomes exposed to the surface or communicates with the surface by a sinus. Suppuration thus occurs and may extend to the surrounding tissues. Sometimes the tumor becomes loosened and lies like a sequestrum in the bony cavity. The growth of each type of tumor is slow. [Material from Hertzler's "Treatise on Tumors."]

LUCY N. EAMES, M.D.

Inasmuch as the given causes of these tumors are mostly histological and ascribed to foetal remnants and development, I believe that the following personal letter with which I was favored by Dr. Davis, will be of interest:

Philadelphia, August 28, 1915.

Dr. V. A. Chapman,
Muskegon, Mich.

Dear Dr. Chapman:

In reply to your letter of August 25, regarding the lining of frontal sinus cavities, I shall be very glad to give you my observations. Frontal sinuses (as are also ethmoid cells, maxillary and sphenoid sinuses) are lined by muco-periosteum. This lining is a thin membrane formed by a delicate layer of periosteum immediately covering the bone, and upon which rests a thin mucous membrane. These points can be demonstrated on microscopic examination. The periosteum and mucous membrane are so closely connected and together form such a thin membrane that we term it "muco-periosteum."

In my monograph on "The Development and Anatomy of the Nasal Accessory Sinuses" on page 20, under embryologic considerations I mention that the nasal capsule develops from the anterolateral portion of the primordial cranium. In the second month of fetal life this nasal capsule shows beginning cartilaginous development. Later in fetal life this cartilage undergoes transformation into osseous tissue. Thus what was originally perichondrium bebecomes periosteum. As mentioned on page 43, ethmoid cells frontal and maxillary sinuses have their origin from preformed grooves or furrows between the folds which develop on the lateral nasal wall. Since the frontal sinuses develop by the advancement of the pneumatization process which originally begins as invaginations in the ethmoid area and advances by resorption of the concellous bone, this same character of lining persists. You will notice on page 111 (24th line), in describing the sinus maxillaris that I speak of the lining as "muscoperiosteum." The same character of membrane, but slightly more delicate, lines the frontal sinuses.

I thank you for calling my attention to the fact that text books and references fail to give an adequate description of the membrane. Thus at some future time when I revise the monograph I shall give a more detailed description. For the immediate purpose of your paper to be read at the State Medical Society Meeting on September 1st, I hope that this information may be of some value to you. I would be pleased to have you kindly send me a reprint of your paper when it is published.

With kindest regards I am

Yours very truly,

WARREN B. DAVIS.

BIBLIOGRAPHY.

Tillmanns, H. Uber todte Osteome der Nasen und Stirnhohle. Dead osteomata of the nasal and frontal sinuses. Verhandl. d. *deutsch. Gesellsch. f. Chir.*, 1885, xiv, pt. 2, 72-85.

Tauber, A. S. On osteomata of the frontal sinus. *Khirurgia*, 1898, iii, 41-59.

Sipogz, G. An osteoma of the frontal sinus with mental disturbance. *Pest. med.-chir. Presse*, 1903, xxxix, 1135.

Pfeiffer. Uber ein Stirnhohlenosteom. *Berl. klin. Wchnschr.*, 1912, xxix, 375.

Poppert, P. Osteomata of the frontal sinus. *Munchen. med. Wchnschr.*, 1892, xxxix, 35-37.

Perthes, G. Value of roentgen rays in diagnosis of and operation of osteoma of the frontal sinus. *Arch. f. klin. Chir.*, 1903-04 lxxii, 1022-1034.

Nakel, P. A case of right-sided osteoma of the frontal sinus. *Deutsch. Zeitschr. f. Chir.*, 1891-92, xxxiii, 308-14.

Manninger, V. Operated case of osteoma of the frontal sinus. *Pest. Med-chir. Presse*, 1903, xxxix, 726.

Moser. Zur Kasuistik der Strinhohlengeschwulste Tumors of the frontal sinus. *Beitr. z. klin. Chir.*, 1899, xxv, 503-525.

Lucas-Championniere. Osteone du sinus frontal. Osteoma of the frontal sinus. *Bull. et mem. soc. de chir. de Paris*, 1886, xii, 807.

Liaras. Osteome du sinus frontal. Osteoma of the frontal sinus. *J. de med. de Bordeaux*, 1895, xxv, 409.

Kikuzi, Z. Zwei Falle von Stirnhohlen Osteom. Two cases of the frontal sinus. *Beitr. z. klin. Chir.*, 1887, iii, 489-500.

Ishunin, I. V. Osteoma of right frontal sinus. *Chir. Vestnik*, 1890, vi, 1-13.

Herzenberg, R. Zur Kasuistik der Stirnhohlengeschwulste. *Deutsche med. Wchnschr.*, 1909, xxxv., 1919.

Hucklenbroich. Osteomata of the frontal sinus. *Inaug. Diss., Fribourg*, 1905.

Hastings, H. An osteoma of the frontal sinus. *Ann. Surg.*, 1905, xii., 624.

Goyanes, J. Estudio del osteoma de los senos frontales. Study of osteoma of the frontal sinus. *Rev. de med. y cir. pract.*, 1904, xxii., 201-241.

Dudon. Osteoma of the frontal sinus. *Bull. et mem. soc. de med. et chir. de Bordeaux*, 1896, 363-373.

Davies, W. T. F. Case of osteoma of the frontal sinus. *Transvaal Med. Jour.*, 1906-07, ii, 129-132.

Coppez, H. Osteome du sinus frontal. Osteoma of the frontal sinus. *Press med. belge*, 1899, i., 292-295.

Coppez, H. Osteome kystique du sinus frontal. Cystic osteoma of the frontal sinus. *Arch. d' ophth.*, 1896, xvi., 566-572.

Coppez, H. Osteome eburne du sinus frontal. Ivory osteoma of the frontal sinus. *Clinique, Brux.*, 1895, ix., 81-85.

Coppez, H. Six case d'osteomes du sinus frontal. Six cases of osteoma of the frontal sinus. *Arch. d'ophth., Par.*, 1895, xv., 279-295.

Cargill, L. V. Osteoma of frontal sinus invading the right orbit and the ethmoidal region and projecting on either side of the root of the nose. *Tr. Ophth. Soc. U. Kingdom*, 1911-12, xxxii, 195.

Citelle. Gros osteome primitif du sinus frontal. *Ann. d. mal. de l'oreille, du larynx, etc.*, 1913, xxxix, 483-89. One case of primary osteoma of the frontal sinus, operation, recovery. Believes in embryonic origin of these tumors.

Banga, H. A. A case of osteoma of the frontal sinus with rupture into the left orbit, extripation, meningitis, death. *Deutsch. Zeitschr. f. Chir.*, 1874, iv., 486-495.

Bhohken, J. Osteoma of the frontal sinus. Hygiea, xxvi, 17-27.

Berge, Antoine. The eye and solid tumors of the frontal sinus. Lyon, 1903, 88.

Birch-Hirschfeld. Demonstration of a case of osteoma of the frontal sinus. *Munchen. med. Wchnschr.*, 1904, ii., 234.

Boyd, S. A case of osteoma of the frontal sinus. *Lancet*, 1890, ii, 607.

Axenfeld, T. Latent osteoma and mucocele of the frontal sinus with negative rhinoscopic findings in the frontal sinus. *Klin. Monatsbl. f. Augenheilk.*, 1904, xii, 229-232.

Arnold, J. Two cases of osteoma of the frontal sinus. *Arch. f. path. Anat.*, 1873, vii, 145-163.

Ardenne F. Case of osteoma of the frontal sinus. *Rev. hebd. de laryngol., etc.*, 1909, i, 641-650.

ADDRESS OF CHAIRMAN OF SECTION ON OPHTHALMOLOGY AND OTO-LARYNGOLOGY OF THE MICHIGAN STATE MEDICAL SOCIETY.*

STANLEY G. MINER, M.D.
DETROIT, MICH.

Fellow Members of our Section:

In selecting me as your presiding Chairman for this meeting, our fourth anniversary, you have conferred the highest honor at your disposal, an honor of which I am most proud, and I assure you of my deepest appreciation.

It is within the province of your Presiding Officer at this time to address you either upon some scientific subject germane to our specialties, or to present some suggestive and essential propositions closely allied with our general welfare for your consideration.

It seems best to allow the program to supply the material for scientific thought and discussion, and grant your Chairman the privilege of reviewing the past and making suggestions for the future.

The basis of a successful meeting unquestionably is a good program and those of us who have had experience well know that it is usually a difficult duty to execute satisfactorily to all concerned. It is unfair to add this burden to the other numerous duties of our Secretary and as the Chairman serves for one year only, he is not familiar with the status of affairs sufficient to produce the best results. Our Section work should be of a character that will benefit and attract the members of our General Society who are interested in our special work. The subjects should be selected and handled with that in mind, and not unduly engrossed in producing a paper that is technical and ideal from the specialist's viewpoint.

A symposium on a subject of common interest to the other Sections and our own, with participants from those Sections would be of advantage to the Society in general, and our Section in particular; as for instance, Pertussis, Bronchial Asthma and Hay-Fever, could be advantageously considered in this manner.

I, therefore, most sincerely urge for your consideration the creation of a standing Program Committee of three members, one to be retired each year and his successor to be elected by the Section, or appointed by the Chairman. I have discussed this question with our experienced Secretary and he is enthusiastic in its approval.

As each specialty in medicine or surgery approaches nearer the goal of a scientific or exact basis we find the importance of correlative dependency in the etiology and treatment of disease particularly emphasized, and the unsatisfactory results of many operations easily explained as not due to lack of *finesse* in operative technic or selection, and that to obtain expected results we must recognize and have the cooperation of not only the allied specialists but the general practitioner, and even the laboratory expert as well.

Recent literature is pregnant with case citations of ophthalmic affections due to abnormal sinus and turbinal conditions, general or local toxemia and circulatory disturbances; mouth-breathing unrelieved by adenectomies and tonsillectomies, frequently because of orthodontic defections; tonsillar, pharyngal or laryngeal conditions unrelieved by treatment because of a co-existing pyorrhea alveolaris, a suppurative otitis media or a chronic sinusitis; as well as sinus thrombosis producing symptoms that place a patient in a typhoid hospital ward.

It thus seem conclusive that we must be broad in our deliberation and views, avail ourselves of the cooperation of correlative workers more frequently and establish a reciprocal confidence with our fellow practictioners that will make our work much easier and produce better results.

If we are to assume our share of the burden of preventive medicine the recognition of the orthodontist must be encouraged, and I believe the affiliation of that specialty with our Section

*September 1 and 2, 1915, Grand Rapids Michigan.

would be an act of wisdom, and result in our mutual benefit, and I sincerely ask the consideration of that question at this meeting most emphatically.

The specialist must keep up in the literature of not only general medicine and surgery, but of the allied specialties as well to obtain the best results in his work. It is as incumbent on us as upon the general practitioner that we recognize the limitations of our possibilities, and seek the cooperation of fellow workers in correlative fields. We must be ever mindful that, "In Science as in Art, there may be pause, but there can be no finality."

A review of the literature of the past year strongly impresses one with the large number of earnest workers in our special field and shows much careful thought and application of all recent ideas, and while it has given us little that is new, it has placed some of the more recent methods upon a firmer basis for general acceptance, and defined the limitations of others.

Suspension laryngoscopy has proven its value, and in making direct laryngoscopy comparatively easy Professor Killian has certainly earned the gratitude of us all. In surgery of the nasal sinuses the pendulum has swung from ultraism to conservatism, especially of the ethmoidal and frontal sinuses, the securing of drainage and local medication obtaining satisfactory results.

Vaccine and serum therapy are still on probation in all departments of medicinn with strong advocates on one side, and equally so on the other. We trust the near future will demonstrate its exact sphere of usefulness.

Throat and mouth infections have received more attention of late than heretofore, and the prevention of infection of the oral and upper respiratory tract should be given every possible consideration; particularly is this true of syphilis. My case records show in the past year seven cases of chancre of the lips and buccal cavity, all in male adults and business men, who patronize down-town lunch-rooms of the quick-serving variety for their noon-day luncheon.

Every other possible source of infection was eliminated by an unfeeling and searching investigation except the coffee-cups, drinking glasses and table ware for common use in these places. The consensus of opinion of myself and confreres, was that this possible source of infection should receive careful inspection and surveillance of our health authorities, and it would seem pertinent to our duty that we suggest some such action by a resolution of this body.

In conclusion, allow me to express on behalf of the Section our full sense of appreciation of the efforts of our industrious Secretary for the welfare of our Society the past year, and I also wish to thank each of the essayists for his generous response to calls for papers and again, I thank you for the honor conferred on me in selecting your Chairman.

DISCUSSION.

DR. STANLEY G. MINER: I would like to see some action taken on the three suggestions offered in my address. The first, concerning the Program Committee, I have talked over with the majority of our members, and they all agree that the need is very urgent. The other two are worthy of consideration. Perhaps you are not ready to decide them today or tomorrow, but I think at least a committee should be appointed to consider them. What I have in mind particularly is the affiliation of orthodontia with our Section. The committee could report and our Section then decide whether it would be wise to have such an affiliation, or simply to do as we have been doing, that is, invite members of that specialty to address us. That is for you, gentlemen, however, to decide. All I ask is that some action be taken on these recommendations; that it be not considered simply as a Chairman's Address and no attention given to it. If we are going to advance with the other Sections, those two things must be considered and disposed of according to your better judgment.

DR. E. J. BERNSTEIN, KALAMAZOO: I think the suggestions of the Chairman are very cogent and timely. The question of having a Program Committee is certainly essential to most of us, and I move that a committee of three be appointed to take that matter up, one to retire each year, so that there will always be a majority in session who are perfectly cognizant of the matter.

Another suggestion made by the President is very timely, namely, with regard to the spread of syphilis through the use of unclean eating utensils at various lunch places. I had no idea that such a large proportion of cases could be traced to that cause. Doubtless, we all realize that that is a very frequent cause of the spread of syphilis, but it seems to me that something ought to be done, and I also move that another committee be appointed to take up these various questions, and report back to the Section on some tangible method of meeting these evils.

DR. GEORGE E. FROTHINGHAM, JR., DETROIT: I agree with Dr. Bernstein, and am glad to second his motions.

THE CHAIRMAN: It has been moved by Dr. Bernstein and supported by Dr. Frothingham that a standing Program Committee of three be appointed, one to retire at each year, as recommended by the Chair; and also that another committee be appointed by the Chair to take up the other recommendations in regard to seeking or influencing legislation towards the surveillance and inspection of restaurants, with a view to preventing the spread of syphilitic infection. The suggestion was also made that a committee of three be appointed to take up the question of adding to our Section the specialty of orthodontia. The question, then, is open to the Section for discussion.

DR. L. J. GOUX, DETROIT: The only suggestion I have to make is that instead of simply mentioning syphilis, I think it would be better to say communicable diseases.

DR. BERNSTEIN: I accept the amendment.

DR. CHARLES W. KIRKLAND, JACKSON: With respect to the third suggestion, I would say that I think that has already been disposed of by the American Medical Association. It is not possible to have dentists in affiliation with any state or local society unless they are graduates in medicine.

THE CHAIR: That would simply affect their eligibility for membership. We could invite them to address the Society, and those who were graduates in medicine could be members of the Society, and thus give them to understand that the proper disposition of any orthodontic subject should be in this Section.

(The question was put by the Chair, and carried, the Chair to appoint the three committees at a later session.)

GONORRHOEA IN PREGNANCY AND THE PUERPERIUM.

C. HOLLISTER JUDD, M.D.
DETROIT, MICH.

(From Notes of Cases at the Crittenton Hospital, where we have from 200 to 300 cases per year.)

Students of eugenics tell us that 75 per cent. of men have gonorrhoea before they are 30—more common than measles; 90 per cent. of blindness is said to be due to the presence of this disease in the mother. The state compels us to expect this organism in the eyes of all children at birth, and yet how frequently we forget these important facts in relation to the *mother herself,* her care before confinement and during her puerperium. Surely in view of the great prevalence of this disease every pregnant woman should be examined in relation to this scourge of the pelvic organs of her sex. Remember, that during pregnancy, women are the most easily infected, or, if already gonorrheics, after labor is by far the most frequent time for the disease to change from a local to a general one. Spreading from the cervix to the tubes and peritoneum. We attend to the baby's eyes but forget the mother. How many cases of puerperal infection is the doctor censored for when the husband was the real culprit?

Sanger states that 15 per cent. of women who are gonorrheics develop a gonorrheal septicemia after child birth. If not directly responsible, this organism aids very materially in the production of a mixed infection because of its wonderful power of lying dormant in the cervix and other glandular parts. This ability to lie dormant is much more pronounced in woman than in men. It is in this way that it produces an almost symptomless infection, perhaps giving symptoms at the menstrual periods which are so masked by the period that they are not recognized. The anatomical structure of the female pelvic viscera admits of this infection being in some cases almost without physical signs. It is these symptomless cases which do so much harm and make a routine examination of the cervix desirable. This organism is ever ready to light up and do irreparable damage.

If an examination is made and gonococci or evidences of the disease are found, it is quite a protection to the doctor as regards the subsequent conditions of the mother. He can use his judgment in informing the husband.

Gonorrhoea in women is so markedly related to the histology of the parts involved, that a knowledge of this histology makes a description of the disease quite simple, and the treatment carried out much more logically, especially when taken in conjunction with the habits of the organism. The gonococci is essentially a surface organism, passing to the deeper layers of the tissues secondarily. It being a surface organism is the characteristic that associates it with the histology of the part involved. It prefers mucous membrane covered with columnar epithelium or ciliated columnar epithelium. When it reaches the glands of this epithelium it is quite protected in growth or in lieing quiescent as the case may be. Skin is quite resistant to this bacteria, being covered, as is the vagina by squamous epithelium; this fact is what makes gonorrhoea of the vagina and vulva so rare in adults. In children the layers of cells are not so numerous nor dense, hence in children the vaginal mucous-membrane is often involved. The vaginal mucous membrane has no true glands, its secretion comes from the mucous membrane.

The cervix, from its anatomical position, is often primarily infected; it represents the area of transition in the epithelium covering of the mucous membrane of the genital tract. The external os being a variable dividing line between the skin-like epithelium of the vagina and the columnar epithelium of the cervical canal.

In the cervix we also have follicles, representatives of uterine glands higher up in the uterus, many minute papillae and numerous mucous crypts the ends of which are expanded and end blindly near the muscular tissue, there being no submucosa in the uterus. These mucous crypts are the glands which pour out the thick mucus so characteristic of the cervix. We often see them when retention has occurred as distention cysts. The cervix then is not only placed anatomically so that it becomes easily infected but it also contains glands which are an ideal habitat for the organism and an epithelial covering which is very vulnerable to this special bacteria. Folds in the cervix known as the arbor vitae and plicae palmatae are an additional barrier to reaching the organisms with antiseptics.

Many authors consider the internal os as quite an effective barrier to the upward extension of the gonococcus. It is also frequently taught that if the infection reaches the corporal endometrium the tubes will become involved. Neither of these statements were borne out by the series of cases under discussion. Applying the histological reasoning to the above statements we notice that the uterine cavity is a very good media for the extension of this organism. In the nonpregnant woman the down-

ward flow of the discharge, the strong alkalinity of the uterine cavity and the question of oxygen are likely the factors which tend to limit upward extension. These facts are in accord with the usual history of upward extension in this disease, which occurs at menstruation or in the puerperium when the above factors are absent.

A corporeal gonorrhoea gives no pathognomonic symptoms though there may be uterine tenderness and a leucorrhoea. If the gonococcus reaches the tubes it may pass into the abdominal cavity through its fimbriated end or if this be agglutinated, through the tubal walls or more rarely through the lymph or blood streams.

A one child sterility is not an infrequent accompaniment of damage to the tubal cilia. The tubes may undergo complete recovery after severe pathological changes; this is rare however if there have been repeated attacks. In the latter case both tubes will usually be affected. The urethra is often primarily infected, involvement in the series of cases mentioned was distinctly in the lower part of the canal often hardly within the grasp of the sphincter, which explains the mild urethral symptoms complained of by these patients.

Skene's glands were frequently infected, the urethral symptoms were very mild (a point of difference with male gonorrhoea) just a slight burning on urination and bladder involvement was very rare. Bladder involvement is said to be common in women but perhaps owing to hospital care it was not a frequent complication in these cases. Histologically the urethra is rather resistant except the glands, being lined with stratified squamous epithelium resting upon a basement membrane. The bladder is lined with a transitional stratified squamous epithelium (columnar cells just under the squamous). In these cases the infection followed the lines of least resistance histologically.

THE DIAGNOSIS IN PREGNANT AND NONPREGNANT CASES.

There is no question in my mind but what the clinical diagnosis is the most important. I do not mean to infer that one should neglect the bacteriological diagnosis, for it is obvious that if the special organism is found the diagnosis rests upon a more scientific basis. (It is interesting to note that the organism has been found in a normal bladder). However, if the organism is not found it must simply be considered as the lack of any other one symptom would be, and cases with all typical symptoms present are rare. A bacteriological diagnosis is not as easily carried out in women as in men. The most disappointing feature about a bacteriological diagnosis is that it is apt to fail us in chronic and symptomless cases, in other words just where we need it most and here is where a careful history should come to our rescue. It is not difficult to find the organism in acute cases nor in pregnancy, where there is a marked discharge and other symptoms of an active disease. Any treatment will make it more difficult to find the organism, also mixed infections, increase the difficulty. And it is far more difficult in women than in men owing to the swarms of different organisms in the genitals of women. Hunting for it in the urine is not very satisfactory, as it rapidly degenerates in the urine. During the puerperium the urethra and Barthylin's glands are the most likely situations to find it.

In the symptomless and chronic cases of this series; that is cases whose histories and social status made us positive that there was or had been a gonorrhoea we were often unable to find the organism after searching thoroughly six to eight films. The only abnormality in many of these unfortunates was that they would have a rather marked corporeal leucorrhea. In chronic cases and in the above class the gonococcus becomes atypical which makes it still more difficult to find. Where there is no active disease some method of irritating the mucosa so as to bring the organism to the surface, before making the film is useful, as a caustic stick, or an electrode, negative pole inserted a little way in the cervix. A cotton plug placed against the cervix; left there for many hours and then the pus secretion thus obtained will sometimes aid in a successful search.

To be identified the gonococcus must present following characteristics: coffeebean in shape, growing in pairs or groups of four or eight. It must be found intracellularly, that is in the pus or leucocyte cell. It should decolorize by Gram's stain. The pseudogonococci which are Gram negative gave us considerable trouble, especially the micrococcus catarrhalis. These Gram negative organisms can be distinguished by growing them on various media. Though the intracellular feature of the gonococcus is sufficient evidence for all ordinary purposes and when coupled with a good history or other symptoms can be considered positive. The best time to find the gonococcus is immediately after menstruation or the first few days after labor.

The appearance of a gonorrheal cervix in pregnancy is plainly characteristic, it is inflam-

ed, enlarged, and bogy. There is considerable mucopurulent discharge coupled with the glandular involvement in the cervix, urethra and perhaps of the vulvo-vaginal glands.

A discharge before pregnancy which was at one time thick and creamy, or yellow, changing to a leucorrhoea; urethral symptoms though mild. Recurrent attacks of pelvic peritonitis especially appearing after menstruation, or childbirth, are all significant factors. Recurrent peritonitis must be differentiated from appendicitis if on the right side. Of the cases under discussion the number in which enlarged tubes could be felt and yet all other symptoms had disappeared was interesting.

GONORRHOEA IN THE PEURPERIUM.

The frequency of a mild degree of fever after labor keeps us upon the alert to find the cause, especially when no vaginal examinations have been made. It is said that 15 per cent. of women who are gonorrheics will develop a true gonorrheal septicemia in the puerperium. Therefore it would seem logical that many others would develop a mild febrile reaction, especially when the situation of the dormant or active gonococci is remembered. Of course a slight amount of fever is often due to an intestinal stasis from pressure on the intestines and splanchnic nerves by the baby.

In this intestinal stasis the lower bowel may be emptied fairly well but other parts of the intestine absorb abnormal quantities of the colon bacillus and other mildly toxic organisms. You will remember that during pregnancy the intestines are pushed far up and crowded into the flanks. The baby's head impinges upon the lower part of the large intestine. The ovaries and tubes are pulled up along side of the uterus and the broad ligaments raised high in the pelvis. These anatomical changes must influence peristalsis markedly, and yet before you make a diagnosis of autoinfection do not forget, the almost ever present gonococcus. We have had no severe cases of gonorrheal septicemia at the Crittenton, in fact very little infection of any kind. Likely because of systematic hospital care, the gonorrheiacs have all done well with their labors. In nontreated cases the story would be different.

Vaginal examinations during labor should not be made without a marked indication, and in gonorrhoea this precaution is still more necessary. The gonococcus has been demonstrated in the decidua (there is a special tube to recover it in this situation) but likely the amnion and the chorion prevent its gaining entrance into the cavity of the former. The reasons for the upward trend of this disease in the puerperium are: (1) trauma, (2) presence of saprophytic organisms in all cases, (3) changes in the mixed discharges, (acid vagina, alkaline uterus which is more or less protective, now all reactions are the same). (4) The presence of blood serum which is favorable to Neisser's organism. (5) Loss of the cillia in tubes and uterus and other changes in the mucous membrane. A gonococcus which is attenuated from treatment or chronicity may be deposited from the husband and remain in various glands of the wife; this organism may remain inactive or give no symptoms that the woman could appreciate. When, however, she becomes pregnant it may be lighted up or cause trouble in her puerperium—a simple febrile reaction or an actual gonorrheal septicemia often resulting.

Condylomata acuminata (venereal warts) grow much more rapidly during pregnancy. In one case of a nonpregnant individual they appeared in large numbers in six weeks. They are caused by irritating discharges containing the special organism or its toxins. Histologically they are exaggerated growths of the papillary layer of the skin and it is interesting to note that a columnar layer is adjacent to the papillary layer. Here again the columnar layer is affected. Gonorrheal warts may be different from those of syphilitic origin by their being smaller and pointed. The syphilitic being flat and broad.

The fever of gonorhoeal septicemia during the puerperium is usually moderate, remissions or an evening rise are not exaggerated; it is steady, and marked exacerbations are not common. The onset of the infection is usually later than a streptococcic infection, rarely before the third day and often the end of the first week.

Gonorrheal septicemia is rarely fatal though recovery is more gradual than in other puerperial infections, general maliase continuing indefinitely. The general condition of the patient is not so alarming as in streptococcic cases. If the tubes become involved the pelvic mass is apt to be high owing to the situation of the tubes, in streptococcic infection the pelvic cellular tissue involvement makes the mass lower. Pain and tenderness over the lower abdomen and tubes are constant and the mobility and lack of pain in the base of the broad ligaments and lower cervix are sometimes quite characteristic. The association of tubal involvement and one child sterility is to be noted, also the relation of gonorrheal infections to decidual and menstrual irregularities.

After a gonorrheal puerperial septicemia the lying-in period is increased more than in streptococcic infection, subinvolution is present and a soft, patulous cervix is usually found. After getting out of bed the lochia remains red, is more profuse or purulent than normal. Backache and pelvic distress are common. The menstrual flow is likely to reappear. Rheumatic pains in the puerperium are suggestive and the tendency of this disease when metastasis occurs to involve any serious membrane must be remembered. It is in this latter class of cases where the vaccines are useful. The amount of damage that can be done to the pelvic organs and yet have resolution take place is surprising, and in operative procedures this must not be lost sight of.

TREATMENT.

In office practice the most difficult part of the treatment is to be able to keep the patient under observation long enough to effect a cure. This means that she must be gradually educated in this regard, and also after her symptoms have nearly ceased, tell her she is not cured, even if they stop all-together, but that you must see her at longer intervals for some time to come.

So many women are ignorant of their condition that it makes the educational element of the treatment very tedious, but if we are not allowed sufficient time it is better not to attempt to treat them at all. It is well to vary the methods of treatment for they soon tire of a routine. They are never cured by giving them a prescription and letting them look out for themselves; continual advice, suggestions and examinations are very necessary. The indications in treatment are to kill the organism on the surface of the mucous membrane, then by some method induce the remainder of the gonococci to leave the glandular elements, when they can be rendered harmless. Penetrating drugs may be used but how far they reach into the compound tubular glands is a question. There have been small instruments devised to expel the contents of Skene's glands and probes to enter them, all of which are useful in appropriate cases.

The negative galvanic pole of an intrauterine electrode placed in the cervix will in some cases aid in clearing up an old infection, when combined with the usual antiseptics. It causes an electrolysis in the gland's fluids, bubbles forming rapidly and an upward current in the gland's contents results.

Silver salts are positively known, even in weak solutions to kill this organism, and in weak solutions it is not irritant. It may be used in from 2 to 5 per cent. solutions; its superiority over Argyrol and Protargal in killing the organism have been demonstrated very carefully by laboratory methods, as has also its greater penetrating ability. Norris has shown these points very clearly. To get nice results it requires some experience in changing the strength of this solution, increase it gradually, watch the effect upon the mucous membrane, and do not produce irritation unless you desire to. Douches unless given in sufficient amount are useless (quarts and gallons) remember that the upper part of the vagina is large enough for the baby's head and in giving solutions there must be enough to bathe the cervix and distend the vagina, so that the solution will reach between the deep H shaped foulds of the vagina. When able nurses give these douches you notice a great difference in the results. Iodine also ranks high in its penetrating power and is a useful drug but rather irritating. Ichthyol is also useful which its chemic contents shows. Bichloride is only fair, phenol is too irritating and non penetrating.

In pregnancy douching is clearly indicated in this disease and gives good results; we have used it at the Crittenton for years. The position of the patient during these douches is important, it should be, so arranged that the solution does not enter the uterus too much. Medication applied to the cervical canal gives good results and if used in nonpregnant women above the inner os the same care as in operative procedures should be observed. Do not use medication above the inner os unless clearly indicated and of course not at all in the pregnant.

Vaccines do not take place of local treatment but are useful in the metastatic cases, (time forbids a further discussion of this subject). Diagnosis by complement-fixation test; a symptom, rare before four weeks, should be regarded about as a one plus Wassermann.

In conclusion I wish to express my appreciation to Dr. Wm. A. Wilson for the privilege of caring for these cases and also for his unceasing kindness and sympathy toward the many unfortunate women who come under his supervision at the Crittenton Hospital.

REFERENCES.

1. Complement-Fixation Test in Gonorrhea. H. L. Rockwood, Cleveland.
2. Trios observations d'urétrite blenorragiques traitées par le sérum antimeningococcique. R. Salle.
3. Zur spezifischen Diagnostik und Therapie der weiblichen Adnexgonorrhoe. M. Neu.

4. The Treatment of Gonorrheal and other Infections with Digestive Bacterial Extracts, Preliminary Report, J. O. Hirschfelder, M.D. San Francisco.
5. Atoxic Antigonococcic Vaccine. Dr. Charles Nicolle, Dr. L. Blaizot, Paris France.
6. Bedeutung der Gonorrhhoe fürdie moderne Wochenbettsdiätetik. W. Hannes.
7. Role of Staphylococcus in Gonorrhea. C. C. Warden, Los Angeles.
8. Treatment of Gonorrheal Infections by Vaccinnes, and Regulation Thereof by Complement Fixation Test. J. E. R. M'Donagr and B. G. Klein.
9. La'avenir du traitement de la blenorragle. J. Janet.
10. Gonorrheal Vaginitis Treated by Vaccine. G. Fitzgibbon.
11. Om gonorrens behandling och botbarhet hos kvinnan. J. Almkvist.
12. A antisepsia e a urethrite chronica blenorrhagica. A. Pereira.
13. Antimeningococcus Serotherapy of Gonorrheal Arthritis. P. Lasserre.
14. Complement Fixation Text in Diagnosis of Gonorrhea. R. G. Owen and H. Snure, Detroit.
15. Gonorrhea in Women, Norris.

ANTHRAX.

W. EARLE CHAPMAN, M.D.

CHEBOYGAN, MICH.

On October 2, 1915 at 9:30 p. m. I was called to see C., four year old daughter of C. F. at the tannery, Cheboygan, Mich. There was a small vesicle on her chin and the surrounding tissues were slightly indurated.

The father was an employe in the tannery and was at the time working in dry Chinese hides. Two days before C. had run to meet him, had been lifted to his shoulder and so carried home. The mother remembered the child having a small scratch on her chin at the time. On October 3 saw patient again and incised the region of the induration on inside of the mouth, made a blood smear which was sent to Lansing Laboratory requesting that the specimen be examined for anthrax.

On October 4, Mr. V. of the firm, asked me if I could make a microscopical examination for anthrax and not wait for the Lansing report. Accordingly, I took Mrs. Chapman, who had special work in bacteriology several years after I was in college, to the house. She found anthrax germs in the exudate, growing in long threads with swollen ends.

Dr. C. B. Tweedale was also in consultation at the time and confirmed the clinical diagnosis of anthrax. The primary lesion, having spread to the size of a quarter of a dollar, was dark red and weeping, temperature 104 deg. F. The child's face was swollen and indurated as far back as the ears down to the clavicle and up to the eyes. As soon as diagnosis was made the child was anesthetized and 60 cubic centimeters of Mulford's Anthrax Serum was injected in the median cephalic vein. Late on October 4 gave 10 cubic centimeters of serum intramuscularly. On October 5 a. m. found temperature 102 F. Three doses of serum 10 cubic centimeters each were given at intervals of seven hours. October 6 temperature slightly above normal, several secondary vesicles were forming around the edge of primary lesion.

Dr. Scarford of Bay City was called in consultation to verify the diagnosis of anthrax. The germ was readily found but had a distinctly different appearance, was more granular and not so long. At this time the child was chloroformed and a small crucial incision made in center of vesicles and tincture of iodine injected and 10 cubic centimeters of serum given intramuscularly.

On October 7 two more injections of serum were given and child's condition improved rapidly, the induration gone and the swelling rapidly disappearing. On October 8, for some unknown reason, the parents left with child, practically well, for Bay City.

WAUKESHA, THE PROUD POSSESSOR OF ANOTHER LARGE MINERAL WATER SPRING.

Several months ago while workmen were digging Moor (Mud) on the grounds of Waukesha's Wonderful Mud Bath Institution, a live Spring was discovered. Digging had to be suspended in that particular territory for several months, owing to the vast amount of water that flowed from same. In several tests made, it was found that the Spring would flow an average of 200,000 gallons in twenty-four hours. Samples of water were taken to competent chemists immediately, and it was found that the water was not only pure, but contained wonderful medicinal properties. In some instances similar to those contained in Moor used at the Bath Establishment. It is therefor evident that many of the medicinal qualities in the Mud were derived from the water that has percolated the peculiar soil perhaps for thousands of years. The Waukesha Moor Bath Co., also known as the Grand View Health Resort, is at the present time erecting a large up-to-date Spring house, where patients as well as visitors may go to drink freely of that wonderful Mineral Water. Plans are also formulated to pipe said water to the Mud Bath Establishment for use in their bath departments as well as in the fountains in various parts of the building. also the guest rooms.

Waukesha has also organized a Golf Club this year. A splendid Nine-hole Golf Course has been laid out by Golf Experts on the grounds of the Waukesha Bath Co., which are only nine blocks distant from the business center. Guests of any of the local institutions are extended the privilege of playing.

The Mud Bath Institution is making extensive preparations to care for the increase of its patronage due to all these wonderful creations, and is presently erecting an immense Solarium which will be as cozy as any in the country.

Waukesha today, with its splendid Institutions, Mineral Waters, Recreation, and Railroad facilities should have all the opportunities in the world to draw a large patronage of health seekers that have heretofore visited European Spas.

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, October 13, 1915

The President, UDO J. WILE, M.D., in the Chair
Vice President, HARRY B. SCHMIDT, M.D.
Reported by REUBEN PETERSON, M.D., Secretary

TECHNICAL IMPROVEMENT IN LANGE'S COLLOIDAL GOLD TEST. FORMALDEHYDE VAPOR METHOD, AND REPORT OF THREE CLINICAL CASES.

HAROLD S. HULBERT, M.D.
Assistant Physician, State Psychopathic Hospital, University of Michigan, Ann Arbor.

In May, 1913, Miller and Levy published in the Johns Hopkins Bulletin the technic of Lange for making colloidal gold and the reaction of colloidal gold on the spinal fluid in a series of cases. Some proteids whose exact composition and quantity are not known are found in the spinal fluid in paresis, cerebrospinal syphilis, and in non-specific meningitis in different amounts. They have, however, a rather characteristic reaction with colloidal gold. This test has been made in the State Psychopathic Hospital in a number of cases this last year. The application of this promising test is seriously hampered by the difficulty of the preparation of the essential reagent. This has lead to an attempt to devise a method of preparation of colloidal gold simple enough to find a place in a clinical laboratory and sufficiently reliable to give the test the importance it deserves.

The technic of the original method is as follows: Only chemically clean Jena glassware is to be used. The water must be freshly double distilled. To 500 cubic centimeters of water at 60 degrees C. are added 5 cubic centimeters of a 1 per cent. solution of gold chloride and 5 cubic centimeters of a 2 per cent. solution of potassium carbonate. At 96 degrees C. are added 5 cubic centimeters of a 1 per cent. solution of formaldehyde solution. The solution must be a clear red with a blue tinge, not cloudy or yellow. The test is made by making dilutions of spinal fluid in 0.4 per cent. salt solution, 1 cubic centimeter in each of ten test tubes, at a strength of 1:10, 1:20, 1:40, 1:80, 1:160, 1:320, 1:640, 1:1280, 1:2560, and 1:5120, with a control of salt solution without spinal fluid. Five cubic centimeters of colloidal gold solution is then added to each tube. The test is read by the degree of decolorization: O, is the original red as in the control; 1, is red-blue; 2, is lilac or purple; 3, is blue; 4, is pale or grey blue, and 5, is colorless. Twenty minutes is sufficient to make the test, and the results read in a few hours. The test is interpreted by the zone of decolorization. In general paralysis the first five tubes are completely decolorized, the sixth, seventh, and eighth tubes show decreasing amounts of decolorization, and the last two tubes remain unchanged. (See Fig. 1, Chart 1). In the "luetic zone." the maximum decolorization is in the third or fourth tubes, and is only partial, i. e. purple or blue, not clear. (See Fig. 1, Chart 2). In non-specific meningitis the maximum decolorization is in the sixth and seventh tubes, and is only partial. (See Fig. 1, Chart 3). The test is recorded either by a graphic or curve, where the ordinate represents the dilution of spinal fluid and the abcissa represents the degree of decolorization, or it is recorded by numbers where the position of the integer indicates the dilution and the value of the integer indicates the degree of decolorization.

In making the colloidal gold solution many laboratory workers have encountered much difficulty in getting a clear solution. The sources of error are many and are hard to eradicate. The gold chloride and the potas-

sium carbonate may be purchased chemically pure, and being solids they will keep indefinitely without change of strength; solutions of them may be made up as needed. On the other hand, the formaldehyde is purchased as formalin, 40 per cent. formaldehyde solution, but because this is a solution of a volatile gas it decreases in strength with time and with usage, and some polymerization occurs. A bottle half full after being in the laboratory a few months has not the exact composition that it had when it was made by the manufacturer. Hence 5 cubic centimeters of a 1 per cent. solution of formalin has not a constant amount of formaldehyde, nor is the degree

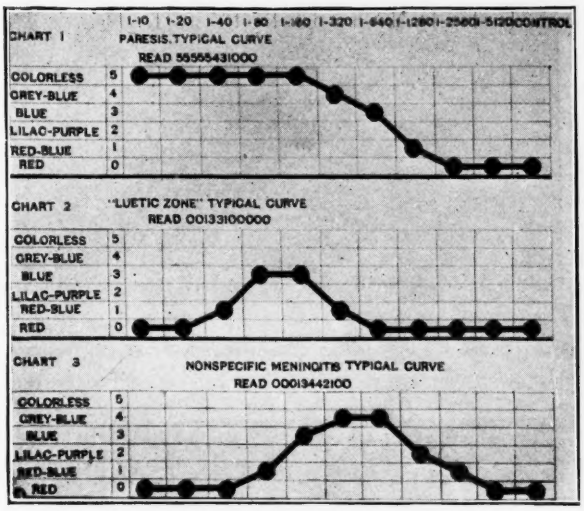


Fig. 1. Typical curves, colloidal gold.

of variability practically measurable. An added disadvantage in the use of formaldehyde in solution is that the reaction can not be controlled because the fluid being added by drops flows in irregularly and sometimes with the last few drops a precipitate or a too deep color appears. Beside the uncertainty of the actual amount of formaldehyde added to the gold and carbonate solution with the danger of excess, there is another and more important objection to the use of dilute formalin. The water used in making the 1 per cent. gold chloride solution, the water used in making the 2 per cent. potassium carbonate solution, and the 500 cubic centimeters of water used to make the colloidal gold is all freshly double distilled to reduce its ionic conductivity. The water in which the stock (40 per cent.) formaldehyde is kept is not so pure, having been in lead glass and exposed to detritus from the cork and from the air. If this relatively impure water is added to fresh double distilled water in making the 1 per cent. solution of formaldehyde, many and unknown variable impurities are added to the reaction.

To obviate the impurity of using formalin, and accepting the volumetric inexactitude of formaldehyde provided the reaction could be otherwise controlled, it was decided to use formaldehyde vapor to change the gold from the form of gold chloride to colloidal gold. Heating the formalin to liberate the formaldehyde as by fractional distillation and to carry it over through a tube into the "gold-carbonate" solution was not satisfactory because the vapor pressure of formaldehyde without steam had not force enough to cause the gas to bubble up through the "gold-carbonate" solution. Heating the formalin to produce formaldehyde gas and steam and letting these bubble up through the "gold-carbonate" solution carried over too many impurities from the water of the stock solution of formalin. Also, some of the vapor condensing in the tubes became strongly concentrated formalin, causing the reaction to proceed irregularly and often to failure. Inserting a condensor, such as a cold water jacket, made the apparatus too cumbersome for practical use in a research laboratory, although it might be satisfactory in commercial work on a large scale. The apparatus eventually devised is small, simple, easily set up and cleaned, and uniformly gives excellent results. Air from a foot bellows is pumped through the rubber tubing to a glass tube, the lower end of which is immersed two or three inches into formalin in a sealed container with a double perforated stopper. The air bubbling up through the formalin becomes charged with formaldehyde gas. The polymers are left behind. The air and gas pass through a large tube half filled with anhydrous calcium chloride and stoppered at each end with cotton and a perforated cork. The air and gas come through free from water vapor and free from mechanical impurities such as might be introduced through the bellows. (See Fig. 2).

To 500 cubic centimeters of freshly distilled water are added 60 degrees C., 5 cubic centimeters of a 1 per cent. solution of gold chloride and 5 cubic centimeters of a 2 per cent. solution of potassium carbonate, as in the original method. This "gold-carbonate" solution is then heated almost to boiling and is kept over a flame because the air bubbling through it tends to cool it. The formaldehyde gas in air is then passed through it and is controlled by the action of the bellows. The solution gradually turns from water-white to a pale blush, then to a

pink, then to a darker red with a bluish tinge. The bubbling causes sufficient agitation in the solution to keep it well mixed all the time. If the reaction is continued too long, the color turns to a dark purple or to a muddy blue. In this modification of the method of preparing colloidal gold no attempt is made to measure the amount of formaldehyde, but the reaction is guided by the color of the solution. Such solutions of colloidal gold are uniformly clear.

As illustrative of the reaction three cases at the State Psychopathic Hospital are presented. First case, Mrs. J. No. 2687, age 53. Twenty-nine years ago a sore on each cheek appeared which extended until they involved the whole nose and part of the upper jaw. She was treated

Fig. 2. Apparatus for making colloidal gold by formaldehyde vapor.

for lupus. There was a great loss of tissue with consequent deformity and much cicatrical tissue formation. (See Figs. 3 and 4). The history of this woman is not complete. A month before admission into the Hospital she had an attack during which she was unconscious, there was foam at the mouth, and the arms jerked and were very stiff. The attack lasted about ten minutes. Four days before admission there were two other attacks during which the eyes were rolled up and the arms were stiff. Two days later she had a series of attacks lasting a few hours; she covered her face or looked strangely at her husband, screamed and talked of being made of fragile glass, then remarked that that was all foolishness. These attacks showed unclearness of consciousness and fan-

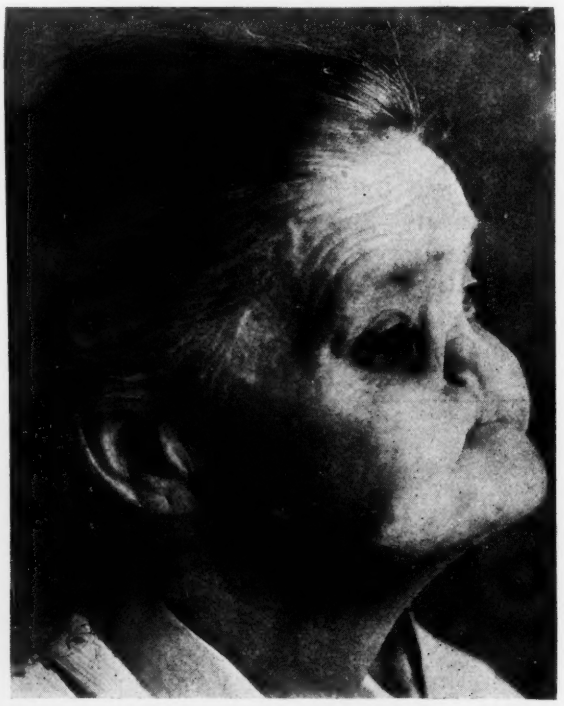


Fig. 3. Case 1. Destructive gummous syphilid of the face and nares.

Fig. 4. Case 1. Destructive gummous syphilid of the face and nares.

tastic ideas with experiences resembling visual hallucinations, marked apprehension, and with yelling and disturbing the neighborhood.

The patient was referred to the Clinic of Der-

matology from which the following report was received: "A most extensive destructive lesion as the result of a gummous syphilid of the face and nares. There is considerable active process in the throat together with marked cicatrization as the result of an ulcerative syphilid in this region. An unusual feature of the case and of especial interest is the association of central nervous manifestation, as it is unusual to find this malignant type of syphilis associated with the late sequela of the nervous system."

From the Clinic of Otolaryngology the following report was received: "Marked depressions of the nose, external structures of which are intact. The throat shows rather thickened soft palate over which there is superficial ulceration; the tonsillar region, markedly injected and reddened pillars. Nasopharynx shows no evidence of bone destruction. We feel that there is no destruction of the bone at the base of the skull, but this could be verified only by X-ray examination because the interior of the nose and the epipharynx is scar tissue."

The X-ray Department reported "The definition of these plates is very imperfect, partly because of the patient's movement and partly because there is erosion of certain other structures with sclerosis of the remainder entirely destroying the usual anatomic landmark. No diagnosis."

The further physical examination also showed large scars of old healed gummata on the face, left axilla, right breast and on the buttocks, large quantities of a tenacious yellow and green substance raised by coughing, negative lung and heart findings, no adenopathy, and neither liver nor spleen enlarged.

The sense of smell was totally lost, pupils were fixed to direct and consensual light stimuli but they reacted in accommodation; generalized hypalgesia, arm reflexes increased and equal on the two sides, knee jerks much increased and equal, Achilles increased and equal, no Babinski, no Romberg, no clonus, fine tremors of the extended fingers and of the protruded tongue but not of the lips, and some inco-ordination in the finger to finger, finger to nose, and heel to knee tests. The fundus was negative.

The laboratory examinations were as follows: Urine negative. Blood count, reds 5,320,000; whites, 17,500; hemoglobin 75 per cent. The blood was four plus Wassermann. The spinal fluid was four plus Wassermann, 14 cells per cmm., Nonne-Apelt 5 plus, Nissal-Esbach 2.2 and the Alzheimer clot showed of 212 cells counted 89.2 per cent. lymphocytes including some tailed forms, 4.7 per cent. large mononuclears, 4.3 plasma cells, 0.4 reds and 1.4 epitheloid cells. The colloidal gold curve was 0013331000. (See Fig. 5, Chart 4).

While in the Hospital she had no motor attacks. She described her former attacks as like a nightmare. "We have had warnings before any of my family died. Before I was brought here I was struck for death like the frost touches the buds: something cold touched my feet like the Angel of Death. I saw some strange things, crazy like, as if we were made of glass and the thunder and lightning were going to blow us to pieces. I disturbed the neighbors by yelling. Then I'd come to myself and say, 'How foolish, for we've always been made of flesh.' My life has been very hard.

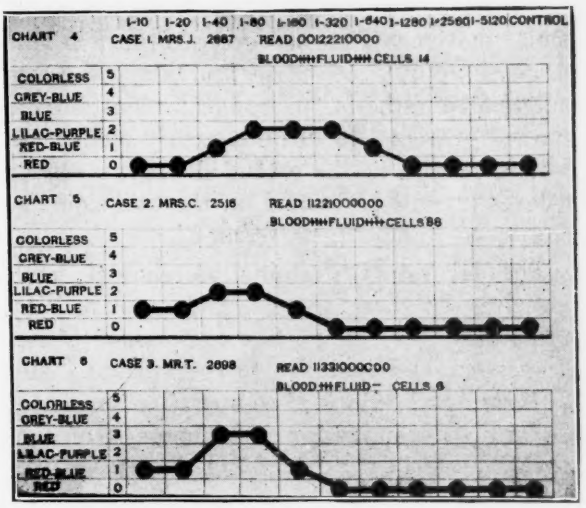


Fig. 5. Colloidal gold curves in cases 1, 2 and 3.

I suppose I'll be ready to die. I'll pray. If my time has come, He will help me pass the dark river." Her grasp was always clear. She was correctly oriented in the three spheres. She had the cheerfulness of resignation and relief, but she was not euphoric. She had remarkably good insight. There was no defect in the memory. There was no apparent deterioration.

In this case the diagnosis was syphilis, probably unlocalizable extension of the gummatous process involving the deep tissues of the face. The colloidal gold reaction was that which is so commonly found in cerebral syphilis, namely, the maximum decolorization in the luetic zone. She was transferred to the Clinic of Dermatology and later was discharged to the Social Service Department.

Second case was that of Mrs. C., age 47, No. 2516. Since she was 42 she has had many hys-

terical complaints, especially a pain in the head suggesting clavus hystericus, attacks of feeling numb and aphonia, but no convulsions. There were many mild paranoid ideas based on suspicion. She once complained of one side of the face being poisoned by soap. She was jealous and suspicious of her husband and her interests always have been self-centered. She has always shown unusual pride and ambition. She entered the Hospital the summer of 1914. At that time the physical examination showed a slight adenopathy, anemia, chronic rhinitis, left eye slightly lower than the right and a slight ptosis of the left upper eyelid; tongue protruded to the left; enlarged median lobe of the thyroid; heart and lungs negative, and an atrophic retroverted uterus.

Neurologic examination showed markedly diminished bone conduction deafness; extra-ocular movements normal except failure in convergence, pupils eccentric and sluggish, conjunctival anesthesia, pharyngeal reflex absent, marked ovarian and inframammary tenderness, coarse tremors of the extended fingers, tendon reflexes present and equal on the two sides, no clonus, no Romberg, no Babinski.

The laboratory examination showed urine negative, secondary anemia, and negative Wassermann on the blood. She complained of loss of memory and inability to concentrate. Her deafness and her lack of co-operation prevented a thorough examination. A diagnosis of conversion hysteria was made and the patient discharged.

In the interval at home she never was entirely well. Two weeks preceding re-admission in 1915 she had temporary sharp pains in the eyes. There rapidly developed a complete ptosis of the left upper eyelid which she said followed directly after an unhappy experience. Having passed the menopause she realized she could have no more children. She had become interested in the little daughter of a workman and had taken the child to a dispensary where the physician had said the girl would lose the left eye. Examination showed the hearing more diminished in the left ear than in the right, the tongue had no tremors but protruded to the left, reflexes all increased, no Babinski, left exophthalmus, very little left extra-ocular movement, left pupil smooth in outline and 5mm. in diameter, no reaction in the left pupil to direct and consensual light stimuli nor in accommodation, no disturbance in vision in the left eye when the lid is raised if the right eye is covered, and diplopia if both eyes used, and no nystagmus.

The Wassermann reactions on the blood serum of this case, as reported by Dr. Sobei Ide, are as follows:

7-23-14	Negative	—
4-16-15	Doubtful	+
5- 1-15	Four plus	++++
6-25-15	Doubtful	+
9-22-15	Two plus	++

The Wassermann reactions on the spinal fluid are:

4-16-15	Two plus	++	(not dependable—bloody)
4-26-15	Four plus	++++	
4-30-15	Four plus	++++	(bloody)
6-16-15	Negative	—	
9-24-15	Negative	—	
6-25-15	Doubtful	+	

The globulin and the total albumin always were increased as shown by the Nonne-Apelt and Nissl-Esbach tests. The cell count, when the spinal fluid was not contaminated with blood was 5-1-15, 88; 6-24-15, 13; 9-27-15, 6. The differential count of the cells by the Alzheimer clot method on 6-24-15 was in 205 cells counted, lymphocytes including both transitional and tailed forms 80.5 per cent, large mononuclears 0.8 per cent., plasma cells 6.7 per cent., epitheloid cells 1.0 per cent., macrophages 1.0 per cent., polynuclears 1.0 per cent. and fibroblasts 1.0 per cent. The colloidal gold reactions were as follows: 5-1-15, 11112220000; 6-15-15, 11221100000, 6-24-15 11221000000 (See Fig. 5, Chart 5) and 9-27-15, 00000000000.

She was very disinterested on re-admission. There was no insight, hence the medical attentions given her were regarded as superfluous. She did not co-operate, and her carelessness caused innumerable mistakes. She was irritable and stubborn. There was no defect in perception and she was oriented for person and place. There was a marked defect in retentive memory with consequent disorientation for time. No speech defect. Parallel speech was observed. She was expansive and euphoric, calling herself perfectly well and happy, and the great woman inventor. There was a childishness in her reaction to incarceration, sulky and mischievous. She never was stuporous here but told of former fainting spells. There was an element of simplicity in her thought and marked defect in her judgment. She complained of headaches in the right parietal region. She failed to respond to suggestion. She was given potassium iodide by mouth and mercury by inunction. Her mood was variable, usually she showed euphoria and intermittant irritability. As her physical condition improved and the

ptosis lifted she remained petulant and inaccessible and the consciousness continued clear. There was a questionable Ganser symptom: when asked to pronounce the typewritten words Methodist Episcopal she answered 'Met-hod-I-Saint, am I right? No? Well, Met-hod-I-street. Met-hod-I-State." There was a paranoid trend to her content of thought, her husband was neglecting her for other women, and her inventions would be stolen. After two courses of mercury inunctions her mental condition showed a marked improvement. The memory defect disappeared. She was industrious. There was no more irritability. She never acquired insight. The euphoria and the paranoid trend persisted. She was discharged improved. This case was diagnosed cerebral syphilis, gummatous meningeal type. The colloidal gold reaction was that described in cerebral syphilis as differentiated from paresis, and resembled that of the first case.

The third case is Mr. T. No. 2698, age 54. The father died at 33 of spinal meningitis and the mother at 68 of apoplexy; the family history is otherwise negative. He used alcohol moderately and tobacco to excess. He had heart and kidney trouble for twenty years. Three years ago he had severe pains in the left arm and in the left leg, and the use of these extremities was impaired. The diagnosis at that time was neuritis. In August, a year before admission, he fell unconscious on the street but no paralysis resulted. The diagnosis then was sunstroke. Within four days he was apparently normal and the pain in the left arm was gone. In September, a month later, he had a stroke of apoplexy after which he was unclear and stuporous for two weeks and dazed for the ensuing two weeks; he had difficulty in swallowing or speaking and the left side was paralyzed. In December he had an attack in which he was very unclear and stuporous for two weeks. He was dyspneic especially at night. He remained dazed until March when his condition improved. In April he had some heart attacks in which he had respiratory trouble and was delirious for short periods. Since then he has never had clear consciousness, but the degree of clouding was very variable.

The physical examination showed emaciation, anemia, marked arcus senilis and sclerotic radial arteries, generalized adenopathy, hypertrophy of the left ventricle and myocardial changes; apex two finger breadths beyond the nipple line in the fifth intercostal space, apex beat forceful and heaving but without systolic retraction, no thrill, no shock; at the base a soft blowing systolic murmur over the aortic region not transmitted to the base, aortic second sound was accentuated, the second heart sound was accentuated in the third intercostal space but no murmur was heard there, a soft blowing systolic murmur in the tricuspid region that replaced the first sound; the second tricuspid sound was accentuated; at the apex there was a soft blowing systolic murmur which had at times a musical quality which was poorly transmitted; the second sound at the apex was followed by a muffled third sound in early diastole; the blood pressure in two readings a week apart was systolic 200, diastolic 140, and systolic 180, diastolic 130. The fundus showed advanced arterial sclerotic changes, edema of the retina and retinal hemorrhages in both eyes.

The neurologic examination showed the pupils to be irregular in outline and their reaction very slow and limited to direct and consensual light stimuli and in accommodation; a generalized hyperalgesia; no tenderness on deep pressure over the nerve trunks; atrophy of the small muscles of the left hand with paresis of the first finger, no change in sensibility in the left hand, left hand grasp diminished, left wrist drop, intention tremors especially in the left hand, tendon reflexes all increased especially on the left side, in fact the neuromuscular irritability was so marked that tapping any of the muscles of the face or arms caused a visible contraction, no clonus, positive Romberg, and no tremors of the tongue and lips.

The urine was negative. No casts, no albumin, urea high normal, 0.489 urea per liter. The blood count was reds 4,480,000; whites, 12,800, of which 78 per cent. were polynuclears, 18 per cent. mononuclears, 2 per cent. eosinophiles and 2 per cent. mast cells; the hemoglobin was 85 per cent. The Wassermann reaction on the blood serum was three plus (+++). The Wassermann on the spinal fluid on June 16 was negative, with six cells. Nonne-Apelt 2, and Nisel-Esbach 2.0. However, the colloidal gold reaction was 113200000. (See Fig. 5, Chart 6). The maximum decolorization being in the luetic zone was diagnostic of cerebral syphilis, the negative Wassermann to the contrary. Therefore a week later another rachicentesis was performed. The results this time were Wassermann two plus (++), cells 3, Nonne-Apelt 5+, Nissl-Esbach 1.8, colloidal gold 1121100000, and the Alzheimer clot showed of 100 cells counted.

Lymphocytes 65.8 per cent. including tailed, disintegrated and transitional forms.
Large mononuclears 25.2 per cent.
Plasma cells 1.1 per cent.
Epithelioid cells 1.1 per cent.
Macrophagus 1.1 per cent.
Red corpuscles 2.1 per cent. These were old disintegrating forms.
Fibroblasts 1.1 per cent.
Polynuclear leucocytes 2.5 per cent.
One section showed a mass of old blood pigment that looked like a fragment of an organized clot.

A third lumbar puncture was done five days later for diagnostic purposes and to give intradurally a provocative dose of salvarsan (0.33mg.) The Wassermann was two plus (++), cells 6, and the colloidal gold was 11221100000.

The first two weeks of residence in the Hospital he was delirious. He was slightly disoriented. "Everything is yesterday." There was an unquestionable progressive memory defect. There was romancing and confabulation. The third week the delirium became more severe, the dyspnea was more marked and he was apparently moribund. He improved under digitalis. He became excited and untidy. August 25 he failed in strength, became stuporous, respiration Cheyne-Stokes, and on August 29 died.

The diagnosis was cerebrospinal syphilis, vascular type; syphilitic psychosis.

Post mortem showed the following gross pathology: edema of the extremities; heart greatly enlarged on the left side, left ventricle distended with coagulated blood, marked hypertrophy of the left ventricular walls, aortic ring dilated causing leakage of the aortic valve, cusps of the aortic valve not sclerosed, aorta enlarged between the heart and the arch and showing many thickened patches not calcified though the endothelium was ragged and denuded in patches giving a "moth-eaten" appearance; pericardial fluid much increased and of a greenish yellow color; cicatrical contractions and adhesions of the apices of both lungs, lungs well distended with air and showing no edema; all abdominal organs congested; in the head there were patches of pachymeningitis, calcified pacchionian attached to the dura; cerebrospinal fluid was so greatly increased that about eight ounces of fluid and semi-clotted blood were removed from the fossae and a large amount of clotted blood from around the base of the brain.

The microscopic pathologic findings were:

Lung.—Purulent bronchopneumonia. Chronic passive congestion. Areas of complete atelectasis. Chronic pleuritis.

Heart.—Perivascular thickening. Sclerosis of coronary moderate. Fatty infiltration subepicardium.

Bronchial Nodes.—Heavily pigmented.

Aorta.—Syphilitic aortitis. Atherosclerosis. Calcification. Thrombosis of vasa vasorum.

Spleen.—Chronic passive congestion. Atrophy. Sclerosis of arterioles.

Kidneys.—Early stage of syphilitic arteriosclerotic kidney involving outer layer of cortex. Repeated healed infarction. Passive congestion. Sclerosis of smaller arterioles. Areas of recent infarction. Some portions show the appearance of a secondary contracted kidney. Numerous hyaline casts. Syphilitic endarteritis.

Liver.—Brown atrophy. Chronic passive congestion.

Pancreas.—Slight atrophy. Sclerosis of vessels. The main pancreatic branch of the splenic shows a marked atherosclerosis with an organizing thrombus partially obliterating the vessels. Some islands of Langerhans are hypertrophic. Localized fatty necrosis throughout the gland.

Adrenals.—Marked lipoid degeneration. Thickening of capsule.

Testis.—Small patches of syphilitic orchitis fibrosa. Majority of tubules show spermatozoa.

Pathologic Diagnosis. — Acute purulent bronchopneumonia. Old syphilis. Active latent syphilis in aorta and kidney. Syphilitic aortitis. Syphilitic endarteritis in renal arteries. Early syphilitic arteriosclerotic kidney. Chronic parenchymatous nephritis. Syphilitic orchitis. Atrophy and passive congestion of all organs. General arteriosclerosis. Organized thrombus of pancreatic artery.

The neuropathologic examination was made by Dr. Albert Barrett who reports:

Brain hardened in 10 per cent. formalin. The form is well preserved. Consistency is firm. Pieces have been removed from frontal and central regions.

The brain has a length of 7.4 cubic centimeters and breath of 14.2 cubic centimeters.

The piamater is clear and thin except over the posterior part of both Frontals, along the longitudinal fissure, streaks of haziness extending from here for a few centimeters above the sulci. The pia is collapsed into the sulci. The

pia over the cisterna is clear. The right olfactory bulb is torn away.

The second and third nerves stand out clearly and show no gross alteration. The other nerves at the base are buried in a diffuse hemorrhage in the arachnoid, which is spread over the inferior surface of the medulla and the cerebellar-pontine angle. Both vertebrals and the basilar show longilar thickenings and small yellow thickenings along their course. There are ring-like thickenings through the carotids and anterior cerebrals. Section through one of these in the left vertebral shows a thickened wall and narrowed lumen. The branches of the basal arteries show small longilar thickenings. Some of the arteries of the pia show scattered yellow thickenings. Others are quite normal in appearance.

Longitudinal section through the middle of the thalamus shows a small softening in the left lenticular nucleus. There is a marked difference in the way the posterior horns extend into the occiptal region. On the left side the posterior limit of the horn is about 15 mm. On the right side the horn extends four centimeters from the posterior top. The softening in the lenticular nucleus extends one centimeter into the depth.

There are no other focal lesions.

Diagnosis.—Endarteritis, syphilitic. Arteriosclerosis of the basal and pial vessels. Diffuse hemorrhage from pia. Softening of the lenticular nucleus.

CONCLUSIONS.

Colloidal gold made with dilute formalin contains many impurities and often is not a clear solution, but when formaldehyde vapor is used the impurities are eliminated and the solution is clear. Dilute formalin is not of constant amount, polymerization occurs, and the exact amount of formaldehyde used can be only approximated; the formaldehyde by the vapor method is not measurable but the reaction can be controlled by the degree of color changes.

The colloidal gold reaction is a simple and should be a practical test. It is a good check on the Wassermann; sometimes it is more delicate than the Wassermann, and seems to offer a differential diagnosis between general paralysis and cerebral syphilis.

DISCUSSION

DR. FLOYD EARL BARTELL: This paper has been exceedingly interesting to me, and I think Dr. Hulbert is to be congratulated upon being able to obtain such clear solutions of colloidal gold. I have had occasion to attempt the preparation of such solutions myself and appreciate what it means. It might be interesting to know something about the properties of the various solutions giving colors such as have been shown here. Zsigmondy a few years ago took up the study of the size of the colloidal particles. The size of the particles of gold such as we see in the beaker before us are probably about ten to fifteen micromicrons in diameter. Colloidal gold, as has been pointed out, is a colloid, irreversible, carrying a negative electric charge. Any electrolyte having positive ions would neutralize it, producing precipitation. In looking at the colors which we have before us, in the red the particles measure about ten to fifteen micromicrons, the red violet fifteen to twenty-five micromicrons, the violet twenty-five to fifty micromicrons, the violet blue about seventy-five micromicrons, the blue about 100 to 130 micromicrons, and the gray somewhat larger. Of course the colorless solution means that the particles have grown to such a size that they have settled out and the solution is practically free from gold. In the case of the bright red solution it means that the particles are of uniform size; this explains the difficulty in producing such solutions. In this work Dr. Hulbert has used sodium chloride. A salt like magnesium chloride should be more effective in changing the color because magnesium with a valence of two, carries twice the electrical charge and probably would be nearly ten times as effective in precipitating gold. Aluminium chloride would be about one thousand times as effective as sodium chloride, aluminum having a valence of three. Of course, it means that with such solutions the gold particles would be made to change from red to blue and the various stages in between. Experiments with such control solutions would be interesting.

As has already been pointed out, we have protective colloids such as gelatin, agar agar and albumin which prevent precipitation. If such colloids were placed in a gold solution we would not get a precipitation unless we had a large amount of salt solution present. Inasmuch as we do get changes from red to blue in the test solution, it shows that the particles are growing. The question then is as to whether the color change and related curve are due to an increase in the quantity of salt, or a decrease in the quantity of the protective colloid. The peculiar thing to me in this table which has just been presented is that as we start to add the spinal fluid the gold remains red, then suddenly changes through the color scale to blue and then goes back to red again. Now if the spinal fluid contains a protective colloid, why doesn't the solution stay red for a longer time, or if it contains something which causes precipitation such as an electrolyte, why should we obtain this second red solution after we have added this greater amount of precipitating solution? Why doesn't it go immediately to blue and remain blue? This surely is an interesting problem from the chemical standpoint.

DR. DAVID M. COWIE: I think the colloidal gold test will be better understood if it is known that the reaction is based on the principles of colloidal chemistry. There are two kinds of colloidal solutions: reversible and irreversible. Reversible col-

loids are those which leave after slow evaporation a residue which is soluble in water. Such solutions are insensitive to electrolytes, that is, they are not precipitated by the addition of an electrolyte. Dextrin, gelatin, albumins and some albumoses are examples. Irreversible colloids are just the opposite. Their residue is insoluble and they are quickly precipitated by electrolytes. For example if dilute hydrochloric acid is added to this solution the red color will quickly turn to blue and a fine deposit of gold will begin to be thrown down.

If a reversible colloid solution is added to an irreversible colloid solution in proper proportion it protects the latter in such a way that the electrolytes have no effect upon it. Accordingly such colloids are called protective colloids. For example if so small amount of gelatin (a protective colloid) as 0.0001 per cent. is added to this red colloidal gold solution the addition of an electrolyte will produce no change in its color or in its physical constitution and should it be evaporated its residue will now dissolve in water.

Each reversible colloid has what is known as its gold figure which is specific, that is, it may take a lower dilution of one than another to protect. Certain albumoses, synalbumose, change colloidal gold to a blue color without the presence of an electrolyte, (NaCl in this test). The luetic process elaborates a different substance or a different quantity of it than some other process at work in the cerebrospinal system.

I became very much interested in this test sometime ago, but from the same source Dr. Hulbert got his inspiration to go ahead with the test I got my inspiration to stop. It was then thought by the Johns Hopkins workers that the test was of no practical value over other tests. Recently some work has been done which seems to show that the test may be of some greater value. These colloidal substances are of interest to pediatricians because they take cognizance of them in infant feeding. In milk we have lactalbumin, a reversible colloid, and casein, an irreversible colloid.

DR. JAMES G. VAN ZWALUWENBURG: Although I am not familiar with the colloidal end of the reaction, it strikes me that the proposed modification of the method of preparation of the colloidal gold is eminently rational and simple. Formaldehyde is an unstable product. We know of at least four condensation products which are bound to occur in a bottle which is not full. Naturally the simplest thing is to use pure formaldehyde vapor provided that the end reaction can be properly controlled. The end reaction as demonstrated is very clear. It seems to me, as Dr. Hulbert has said, that it promises to give the test its place in clinical medicine which it rightly deserves.

DR. UDO J. WILE: I should like to say that there is a practical bearing to Dr. Hulbert's paper that may not have been apparent to everyone. The cases of general paresis that are usually diagnosed as such are easy of diagnosis. So also are the cases of frank cerebrospinal syphilis. There are a number of cases, however, in which the most careful neurologic examination fails to establish a differential diagnosis between general paresis of an aberrent and an unusual type and cerebrospinal syphilis. Now when one considers that a patient with general paresis is no longer responsible and that he may be holding positions of trust and that a certain degree of watchfulness over his affairs is necessary after a diagnosis has been made, and that such care does not have to be exercised in cases of cerebrospinal syphilis, any test which would differentiate those two conditions is worthy of the greatest study and commendation. The colloidal gold test as first described was not satisfactory for the reason that the colloidal gold was a very doubtful quantity. If he has by his method eliminated this doubtful factor in diagnosis, I think Dr. Hulbert has made a very distinct advance.

DR. HULBERT: In the third case, the man who died, when we got a 3+ Wassermann on his blood, the Wassermann on his spinal fluid was negative. We did a colloidal gold test on the spinal fluid and got this chart as described here.

In our cases, so far about sixty, we have never yet found a case where the colloidal gold test did not agree with the diagnosis that we otherwise made. So in spite of the negative Wassermann at that time, we punctured this man again and at this time we got a 2+ Wassermann and the Alzheimer clot agreed with cerebrospinal syphilis.

It will be our pleasure through the next year to do the colloidal gold test on any samples of spinal fluid sent to us from this Hospital or others which will send us spinal fluid for examination.

THE EFFECT OF POTASSIUM IODIDE ON THE LUETIN REACTION.

JOHN W. SHERRICK, B.S., M.D.

Resident Obstetrician and Gynecologist, University Hospital, Ann Arbor, Michigan.

In the *Journal of the American Medical Association,* July 31, 1915, I published a preliminary report on the effect of potassium iodide on the luetin reaction. At this time I wish to bring to the attention of the Clinical Society further consideration of the same subject and take the liberty of quoting from this article.

During the past year I had the opportunity of studying the luetin reaction somewhat in detail on patients admitted to the Neurologic Service of the University Hospital. As a result of this study it was attempted to determine the value of the luetin reaction in the diagnosis of syphilis, the proper technic and the influence of various factors, such as medication, etc.

Observations were made, sometimes repeatedly, in a series of 235 cases from the Neurologic Clinic, service of Dr. C. D. Camp, for whose kindness in giving permission to use this clinical material, and for whose assistance and many suggestions I am greatly indebted. This reaction was also tested on a series of sixteen cases admitted to the Clinic for Dermatology and Syphilology, service of Dr. Udo J. Wile,

whom I wish to thank for the use of this clinical material.

I wish to thank Dr. Noguchi for his kindness in furnishing the luetin material used in these tests, also Park-Davis & Co., for luetin material furnished. The technic followed is that described by Dr. Noguchi, namely, the intradermal injection of a 1-1 dilution of luetin material with saline. The luetin material consists of a suspension of a number of strains of Treponema Pallidum grown for a period of six, twelve, twenty-four and fifty-six days on ascitic agar and ascitic bouillon at 37 degrees C. and under anerobic conditions. This material is then carefully ground to a paste which is in turn gradually diluted with the fluid until a liquid emulsion is obtained, the emulsion then being heated to 60 degrees C. for one hour and a preservative, trikersol, added. The test as used is claimed to be a cutaneous reaction for the diagnosis of syphilis in the latent and tertiary stages.

The cases were taken indiscriminately and were both luetic and non-luetic. In fact, a large percentage were non-syphilitic from every standpoint, including cases of pernicious anemia, brain tumor, hysteria, traumatic neurosis, muscular dystrophy, sciatica, chronic nephritis, neuritis, epilepsy, Grave's disease, multiple sclerosis, arteriosclerosis, disturbances of the internal secretions, et cetera. The reaction was observed on an average of from eight to ten days and in many for a period of several weeks.

A detailed report of the various factors above mentioned will be deferred to a later communication. In this report I wish to call attention to the influence which potassium iodide has upon the luetin reaction.

The fact that the administration of potassium iodide will cause a positive luetin reaction which otherwise would have been negative in non-syphilitic individuals seems not to have been discovered. Furthermore, the fact that this is indistinguishable from the reaction indicative of syphilitic infection is a matter of considerable importance to those using the luetin reaction as a means of diagnosis. If the patient suspected of being syphilitic has received potassium iodide either before, during, or shortly after the use of the test, the result is entirely unreliable. The fact that the iodides are capable of causing this reaction to the intradermal injection of luetin may throw some light on the pharmacologic action of the iodides.

Where potassium iodide is administered to patients who have undergone a luetin test, it is found that in practically every case a pustular or nodular reaction results; in this series only one has failed to respond. As a rule, relatively large doses are required to bring about this condition, on an average of twenty to thirty grains three times daily, but a great deal apparently depends on the individual's susceptibility, a positive reaction being obtained in several cases with small doses, grains ten, three times daily. This reaction is characterized by a marked areola, with redness, edema and swelling appearing in a very few hours after the injection and gradually increasing in its manifestations. There is a firm, central nodule of a bright red color raised above the surface of the skin and extending deeply; this nodule develops an area of central necrosis which, in turn, is in most cases replaced by a hemorrhagic pustule. The intensity of the reaction varies in different individuals but always goes on to the pustular stage if the drug is continued. This pustule upon discharging soon heals and marks the end of the reaction. If only small doses of potassium iodide be given, or if large doses be given for a short time, and the drug is stopped short of the pustular stage, there is a similar reaction to the iodide but no discharge, and the lesion involutes, to reappear again upon subsequent re-administration of the iodide. This has been demonstrated in several cases, and with proper manipulation I think can be obtained in practically every case.

It is interesting to note that the period elapsing between the injection of the luetin material and the ingestion of the potassium iodide may vary widely with still positive results. In one case with a negative luetin test, potassium iodide was given in small doses some two months later and the old seat of the test immediately developed an areola with a firm, red, central nodule. The potassium iodide was then discontinued and the reaction stopped short of the pustular stage and underwent complete involution. Subsequent administration of potassium iodide several weeks later resulted in a similar response. If potassium iodide is administered at the time of the injection of the luetin an intense reaction develops in from three to eight days. A similar result ensues if the patient has been receiving potassium iodide previously but even more quickly. If, however, the patient has received potassium iodide over a considerable period, but none previous to the luetin test, a positive luetin will still result if too long a time has not elapsed from the time

of the administration of the iodide. In one case a marked reaction was obtained three weeks after the potassium iodide was discontinued.

A reaction similar to the luetin can be obtained by the injection intradermally of other substances, such as agar, starch, et cetera, and administering potassium iodide. The response which agar shows to potassium iodide is more marked even than the luetin material, an intense reaction involving practically the entire surface of the arm resulting. A very thin emulsion of agar, less than 1 per cent. is injected in 0.07 cubic centimeter doses. There is a response without potassium iodide but this, in the course of a few days, involutes if not influenced by potassium iodide. A positive agar reaction with potassium iodide has been obtained by administering iodide some weeks after injecting the agar.

A thin starch emulsion, injected in the same manner, will, under the effect of potassium iodide, give a similar pustular reaction; but as yet it has not been determined the length of time after which such reaction could be obtained. Insoluble substances, of the nature of bismuth, will not give this reaction, nor will vaccines such as the gonoccocus vaccine, et cetera.

Another point of note is that the administration of other drugs which contain iodine, such as thyroid extract, will develop a reaction similar to the potassium iodide. Painting the lesion with iodine, however, does not give the reaction.

The effect of the iodides on the luetin reaction has been tested in forty-eight cases, both syphilitic and non-syphilitic, and the results obtained seem to justify the following conclusions:

CONCLUSIONS.

1. A positive pustular or nodular luetin reaction can be obtained in 99 per cent. of all cases irrespective of the presence of syphilis, by the administration of potassium iodide, either simultaneously, or shortly before, or after the intradermal test.

2. Other substances, such as agar and starch, when injected intradermally, will give a similar reaction when potassium iodide is administered, but with these substances the potassium iodide must be administered within a shorter time than is the case with the luetin.

3. Other drugs containing iodine have a similar influence on the luetin reaction.

DISCUSSION.

DR. HARRY B. SCHMIDT: I would like to ask Dr. Sherrick if he has ever tried tuberculin with iodine.

DR. SHERRICK: I have not.

DR. D. M. COWIE: I would suggest trying the emulsions of some of the other spirochetes.

DR. UDO J. WILE: I may say that I had an opportunity of seeing a number of Dr. Sherrick's tests before I knew the nature exactly of the reaction that had been performed, and I said unreservedly in two or three instances which I can remember that the reaction was a typical luetin reaction.

This work is very important and indicates very clearly the relative uselessness of this test as a clinical aid. It was hoped at the start that the luetin test would displace the Wassermann test and place in the hands of the general practitioner a very convenient way of finding out whether a patient had syphilis. Many syphilitics do react to the luetin, particularly those who are in a later stage of the disease. It is claimed that it will show up a syphilitic taint when the Wassermann will not. My first experience with luetin some years ago when it was first advocated, did not convince me that it had any advantage over the Wassermann reaction. I may say too, in regard to the character of the reaction under discussion, it has been suggested, or might suggest itself, that the skin test that Dr. Sherrick has brought out is an iododerma. It looks nothing at all like such a manifestation. Iodine gives rise to a superficial pustule. It never leaves a scar. These lesions look like tuberculides. They leave a little pigmented and atrophic scar and it would seem likely that they are due to some peculiar interaction between the iodide and the tissue itself, irrespective of the spirochete.

DR. SHERRICK: I might add that out of the 235 cases upon which this was tested, there are only two or three that I would say gave a luetin reaction which is described by Dr. Noaguchi and other men who have worked with it as typical of the reaction. We are planning this year to carry this work a little further since through the courtesy of Park, Davis & Co. we are furnished with new material in which the spirochete is grown on a new medium not containing agar agar.

PRIMARY CARCINOMA OF THE APPENDIX.

CYRENUS G. DARLING, M.D.

(From the Surgical Clinic, University Hospital, Ann Arbor, Michigan.)

Mr. H. L., age 39 years, a student, entered the University Hospital September 8, 1915, complaining of distress in the stomach and vomiting with pain in the epigastrium and lower right quadrant.

The family history is negative as regards carcinoma and lung trouble.

His personal history consists of the usual children's diseases with uneventful recoveries. He had typhoid at 30, but made a good recovery in six months.

His present trouble began about one year ago, since which time every three or four weeks he has had severe headache, sour stomach and loss of appetite. These attacks have never been accompanied by abdominal pain. The last attack similar to the former attacks, began six days before the operation.

Two days before the operation he had severe pain in the right lower quadrant which radiated to the mid line and epigastrium. Pain was present in the right lower quadrant for the first time; there was no temperature until twelve hours before the operation when there was a severe chill followed by a temperature of 100.4 degrees, pulse 118. At eight o'clock the same evening the temperature was 98 degrees, and the pulse 68. A diagnosis of appendicitis was made and immediate operation advised.

The appendix was found free from marked outward appearance of inflammation and except for the club shaped free end probably would not have been considered diseased.

The meso appendix was slightly thickened and the lymphatic nodes were not sufficiently enlarged to attract attention. The appendix was removed in the usual way and when opened showed a cyst-like cavity at the tip one-half by one-quarter inch in size, which was filled with a mucous secretion. This was entirely closed off from the remainder of the canal by a thick barrier of hard tissue. Beyond this point the mucous membrane was very red and congested. The muscular and connective tissue layers were much thickened over the cystic part, but nearly normal over the remainder of the appendix.

According to the usual custom the specimen was sent to the pathological laboratory and Dr. Warthin returned the following report: "Primary carcinoma of the appendix of the type peculiar to the appendix. Infiltration extends into the meso appendix. The prognosis in this type of carcinoma may be considered good as a relatively large proportion of the cases reported have apparently recovered, going for a long time after operation without a recurrence. Such a case we had in Dr. Peterson's clinic some years ago. As the meso appendix is extensively infiltrated, I would advise a second operation with the dissection of the neighboring lymphatic tract and the removal of any mesenteric nodes that might seem enlarged. The prognosis then, I would consider relatively good."

Following the advice of Dr. Warthin a second operation was performed and a careful search made for any enlarged lymphatic nodes. Only two were found, one above the iliocecal junction, and another in the meso appendix. Both were removed. While some of the meso appendix was removed it did not show any change except such as would be seen in the process of repair. The material from the second operation was also sent to the pathologist who reported that lymph nodes showed no metastasis. He considered the prognosis relatively quite good.

The diagnosis of carcinoma of the appendix is rarely made before operation and in this case not until the pathologist examined the specimen.

Emil Reis reports a case found by accident while operating for another condition, and mentions another described by Watkins which had a mucous cyst distending the end of the appendix.

DISCUSSION.

DR. REUBEN PETERSON: Not knowing the nature of the case report to be given by Dr. Darling, naturally I didn't look up the case referred to by Dr. Warthin. My recollections of the case, however, are that it was discovered in the same way as was this case, through the routine examination in the laboratory. I think it occurred at the time I was removing every appendix when the abdomen was opened, and that the report came back that this particular specimen showed carcinoma. The patient as I remember was not reoperated upon but whether there has been a recurrence in the case I don't know. With the Society's permission, I will look up the case and add it to Dr. Darling's case report so as to put on record another case of carcinoma of the appendix.

I think the large majority of these cases will be discovered in just this way. Early in the disease there will be no clinical symptoms to enable us to make a diagnosis prior to operation. Late cases will be considered carcinoma of the cecum. It is very fortunate that the lymphatic supply of the appendix is such that extension from the primary focus is usually very slow.

The case referred to by Dr. Warthin was reported by him in the December number of the *Physician and Surgeon*, 1906, under the title: "Primary basal-celled carcinoma of the appendix; Report of a new case with some observations bearing upon its histogenesis."

"The clinical history of the case previous to the operation is without any definite bearing upon the pathologic condition: Mrs. B. G., aged 32, married eight years and has one child, now twenty-two months old. Her trouble began about nine months ago with swelling of the elbow diagnosed as 'periostitis.' A few months after this she began to have pain in right inguinal region and then noticed pus in her urine. Micturition was painful.

but the flow of pus was not constant and gradually diminished. A clinical diagnosis of pustube was made and she was operated upon by Dr. Peterson on August 5, 1903. A mass of adhesions was found about the right tube and ovary, involving the appendix, cecum and small intestine. The appendix was freed from the adhesions and removed. An abscess containing about an ounce of pus was present in the right ovary, and this organ in connection with the right tube removed. The patient recovered from the operation, and a few months ago was reported as perfectly well."

Microscopic examination of the appendix showed it to be the seat of a primary basal-celled carcinoma of the appendix. The following extract is of interest since I have learned that the patient twelve years after the operation is in good health with no signs of recurrence:

"Toward the proximal end the appendix as a whole became somewhat constricted, the lumen much smaller but obliterated in the same way with fibrous connective-tissue trabeculae containing cell-nests as in the middle and distal portions. At the extreme proximal end the tumor nests were fewer and smaller, but persisted to the last section. It is, therefore, probable that the growth extended as far as the cecum but as the patient has for three years shown no signs of intestinal involvement such an extension into the cecal wall may not have taken place. On the other hand, there is still a possibility of a future invasion of the cecum from the stump of the appendix."

In conclusion Warthin says:

"It has been suggested recently that primary carcinoma of the appendix probably plays an important part in the origin of carcinoma of the cecum. I think this is doubtful in so far as the basal-celled variety is concerned, and this form, as has been shown, is by far the most common neoplasm of the appendix. The columnar-celled type may play such a role.

"In conclusion, the great majority of primary neoplasms of the appendix represent a specific type of carcinoma corresponding histologically to the basal-celled carcinomas of the skin, and are relatively of slight malignancy, having little tendency to metastasis and recurrence after operation. While not common, their rarity is evidently exaggerated. They occur most frequently in early life—before the fortieth year. A good prognosis may be given in cases of this type. Their etiology is to be referred to a neoplasia occurring in epithelium snared off during the process of repair in chronic appendicitis, or to a neoplasia of aberrant epithelium in the wall of the appendix."

DR. WALTER A. HOYT: Dr. Darling spoke about the percentage of these cases which have been reported. In the Annals of Surgery for May, 1914 there appears a report from the Mayo Clinic of over 8,000 appendectomies, with forty cases of primary carcinoma of the appendix. Out of these forty cases, only five times was it possible to palpate a mass in the right side before operation. This gave a .44 per cent. In this series of cases the youngest patient was five years of age. What seems to me most important in this report is the fact that between 90 and 95 per cent. of the cases occurred in obliterative appendicitis, and usually in the tip. In this series one out of every 225 cases of appendectomies showed carcinoma and taking the series of obliterative appendicitis, one out of every thirty-five showed primary carcinoma of the apendix. This, it seems to me, is very important in the diagnosis. In the Surgical Clinic since I have been here there have been three cases. Dr. Darling says he knows of no other prior cases. So our percentage since I have been here would be about .07 per cent. These cases apparently are much more common in the female than in the male.

There is also in the last Annals of Surgery a report of four cases made at a meeting of the New York Surgical Society in which there was a recurrence in two cases out of the four. Two cases were quite far advanced. One of the cases here in the University Hospital showed a palpable mass in the right side. Examination showed a large carcinoma of the appendix. This man returned two months later with secondary carcinoma.

DR. DARLING: I merely want to say a word in regard to the points brought out by the discussion. One is that the evidence with regard to the relative frequency of carcinoma in obliterative appendicitis is very misleading. There is a natural tendency for the appendix to be obliterated without serious symptoms so that comparatively few cases of this type will be operated upon and those operated will come in the period of life when carcinoma is most likely to appear. So I think that those of us who may have obliterated appendicitis ought not to feel that this report is as terrible as it appears.

A CASE OF CONGENITAL CYST OF THE STOMACH.

WILLIAM LYON, M.D.
JACKSON, MICH.

Baby L., female, was born at the Jackson City Hospital, June 21, 1915. She weighed seven pounds at birth and seemed quite vigorous. The infant began vomiting early in the morning of the 23rd and continued to vomit frequently until leaving the hospital on July 1 when she was taken away for adoption. She had nursed poorly and did not seem to thrive at all. The baby was re-admitted to the hospital the morning of July 9 and weighed five and three-quarters pounds at this time.

I first saw the infant on July 10. She was very stupid and lifeless, refusing all food and water and vomiting frequently a dark brownish liquid, thick with mucus. The bowels had usually moved each day and the stools were always dark.

Examination showed a very pale, flabby body, respiration shallow and irregular, pulse about sixty and very feeble. Examination of the abdomen revealed a mass larger than a goose egg lying in the upper half, freely movable to almost any position, very tense and giving

a feeling of fluctuation. Use of the stomach tube with lavage did not affect the mass at all and delivered nothing but a small amount of brownish mucus.

Diagnosis of a cyst was made and puncture with a trocar was followed by the escape of nearly four ounces of clear, glairy fluid, the last of which was quite thick, the empty sac being plainly palpable.

Almost immediately the infant took food and stimulants freely and brightened up amazingly. The sac was appreciably filling the next day and on the third day was quite full with returning symptoms of obstruction. Tapping was again performed July 14 and 17 with much the same results as at first. The weight now was five pounds.

On the 21st the condition was again very bad the weight being four and three-quarters pounds. The rectal temperature was 103 degrees and the pulse weak and irregular. Operation was advised as a last resort, and was immediately performed by Doctors Myers and Brown.

Upon opening the abdomen in the median line, a mass about three and a half inches long by two and a half inches wide presented and was found to correspond to the greater curvature of the stomach and to extend for a short distance past the pylorus upon the duodenum. The lumen of the stomach was small and quite empty. An attempt to remove the sac showed the walls to be very thick and distinctly friable. During efforts at removal the pylorus was cut into and the opening closed with much difficulty because of the friability of the thickened tissue. Nearly an hour was required to complete the operation and the infant was apparently dead at its conclusion. Artificial respiration and the free use of stimulation brought reaction after a half hour and conditions steadily improved for about eight hours, when sudden collapse and death supervened.

The location of the cyst was such that when it was full, the pylorus was practically impervious with no obstruction when the cyst was empty. Before evacuation, the symptoms were very similar to those of any severe pyloric stenosis.

Dr. Blakeslee who made the pathologic examination of the specimen states that the structure was very similar to stomach wall except that the mucosa was thinner and smoother and showed but slight glandular formation.

DISCUSSION.

DR. LYON: Dr. Cowie asks me as to the examination of the fluid. The first fluid showed a very small amount of albumin and seemed to be largely composed of mucus. At the time of operation there was a little pus in the fluid, probably from infection during aspiration.

PROPAGANDA FOR REFORM.

Iodum-Miller.—The A. M. A. Chemical Laboratory reports that Iodum-Miller was found to be essentially a solution of iodine and potassium iodide in glycerin containing 1.68 per cent. of free iodin. The Council on Pharmacy and Chemistry report that Iodum-Miller was not eligible for New and Nonofficial Remedies because incorrect statements are made in regard to its composition; because unwarranted therepeutic claims are made for it; and because the application of a trade name to a simple solution of iodin is not to be countenanced (*Jour. A.M.A.*, Oct. 2, 1915, p. 1202.)

Hexa-Co-Sal-In.—Hexa-co-sal-in (Hexa-Co-Sal-In Company, Red Bank, N. J.) is advertised as "a condensation product of familiar composition" and that it is "colchi-magnesium salicylate with anhydrous hexamethylenamin." An examination made by the A.M.A. Chemical Laboratory showed that Hexa-co-sal-in is a simple mixture of hexamethylenamin, magnesium salicylate and some colchicum preparation. The Council on Pharmacy and Chemistry reports that the statement of the composition of this prepararation is false; that unwarranted therapeutic claims are made for it and that the mixture is unscientific (*Jour. A.M.A.*, Oct. 2, 1915, p. 1203).

The Soy Bean.—The soy bean is of medical interest: (1) because it contains the enzyme, urease, which converts urea into ammonia and carbon dioxide and hence is used to estimate urea in urine; and (2) because soy bean products have been recommended as foods for diabetics. Street and Bailey of the Connecticut Agricultural Experiment Station, report that although the soy bean contains about 25 per cent. total carbohydrates, only about 8 per cent. composed of sugar, starch and dextrin, may be considered objectionable in a strict diabetic diet. Thus the sugar-forming carbohydrates contained in soy beans fall well within the limit of 10 per cent. regarded as safe for diabetics (*Jour. A.M.A.*, Oct. 16, 1915, p. 1372).

Iod-Izd-Oil (Miller's).—Analysis in the A.M.A. Chemical Laboratory indicated Iod-Izd-Oil (Miller's) to be a simple solution of iodin in liquid petrolatum containing, not 2 per cent. of iodin, as claimed, but only 0.42 per cent. The Council on Pharmacy and Chemistry found the preparation ineligible for New and Nonofficial Remedies because the composition is not correctly stated and because the application of the trade name to a simple preparation of this sort is irrational (*Jour. A.M.A.*, Oct. 2, 1915, p. 1202).

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

EDITOR
FREDERICK C. WARNSHUIS, M.D., F.A.C.S.
Grand Rapids, Mich.

All communications relative to exchanges, books for review, manuscripts, news, advertising, and subscriptions are to be addressed to Frederick C. Warnshuis, M. D., 91 Monroe Ave., Grand Rapids, Mich.

The Society does not hold itself responsible for opinions expressed in original papers, discussions, communications, or advertisements.

Subscription Price—$3.50 per year, in advance.

January

Editorials

COUNCIL MEETING.

The regular mid-winter meeting of the Council will be held in Detroit at the Hotel Statler, Parlor C, 9:00 a. m., Wednesday, January, 19, 1916, for the transaction of the regular order of business and the consideration of such other matters as may properly come before that executive body.

Signed W. T. DODGE, Chairman.

THE NEW YEAR.

The present number of the *Journal* marks the commencement of a new volume—the Fifteenth. We feel that the time is opportune to request our members to ponder over our *Journal* problems and to unitedly pledge their support to its purposes.

We do not for a moment wish to convey that our publication is in dire straits or confronted by a crisis. We are of the opinion that at present it reflects a high standard and may be favorably compared with any other state publication. However, we are not by any means content to permit our efforts to remain stationary or cease to strive for the attainment of still greater objects.

We have endeavored to cause our pages to contain articles of scientific and practical value to the greatest number of readers. We have purposely sought to omit any article that was but a repetition of ordinary observations. Perforce we also declined to publish papers on ultra scientific subjects. Eager indeed we have been to impart information on newer methods and teachings that tried experience has demonstrated as practical and dependable. On the whole the purpose has been to cause our original articles to exert a stimulating and uplifting influence on all our members. To do this has been difficult and frequently our efforts were unavailing because suitable articles were unattainable. Our ability to achieve these ends are largely dependent upon our members for it is they who must contribute the manuscript.

Here, then, is the first line of action where enlistments are required. We solicit your articles that reflect the scientific progress, study, investigation and experiences of the profession of Michigan.

We have ever been of the opinion that Case Reports, well written up with a final concise summary of conclusions are of practical, instructive value. We have been unable to secure such individual reports. This is our second intrenchment we are anxious to establish and secure enlistments. Every active practitioner meets with repeated frequency some extraordinary or interesting case. Its report is earnestly solicited for they are bound to prove of interest and value to our readers. We would like to publish two such Case Reports in each issue.

The Transactions of the Clinical Society of the University of Michigan will be continued as in the past. These valuable papers are a distinct asset to *The Journal* and are appreciated.

Editorially we admit our inability to comment upon the many diversified interests of the profession. The field is so large that one man cannot authoritatively write upon every topic or happening. Here we are again dependent upon those, who, by reason of their field of activity, are more intimately acquainted with the subject under discussion. We have at frequent intervals written to this or that member requesting him to write an Editorial upon some timely topic. Our requests have been met with pleas of inability, lack of time or ignored. This is the third intrenchment we solicit strengthening. Will you not cause your editor to be the recipient of unsolicited editorials upon timely scientific, organization, civic and communal topics?

Our pages devoted to County Society Reports are maintained for the purpose of stimulating the meetings of the component units of the state organization. By ascertaining the nature

of the work that these County Societies are conducting a renewed interest is bound to become evidenced. County Secretaries are urged to resolve to send in a written report of their meetings and not a mere printed program.

Our membership does not consist of isolated groups of individuals. We are one large family mutually interested in one another's coming and goings. Our News Notes is the fireside of our fraternal relationship. May we not increase its warmth by being enabled to publish more items contributed by our readers?

Lastly our advertising pages make all the foregoing possible. They are an absolute necessity unless we wish to increase our subscription price to $3.00. Repeatedly have we discussed this subject; once more do we urge that you:

1. Read every advertisement.
2. Patronize every advertiser in preference to all the other firms.
3. Let the advertiser know that you favor him.
4. Endeavor to induce others to utilize advertising space in your publication.

This request must receive your continued interest and co-operation and equals in importance all the others.

A statewide manifestation of expressed willingness to co-operate in a movement to make the *Journal* reflect to its fullest degree the progressiveness and high standing of the medical men of Michigan will cause each member and reader to reap ample rewards in the form of receiving each month a better, larger and more valuable *Journal.* Are you disposed to aid and do your part in such a movement?

NATIONAL MEDICAL EXAMINING BOARD.

Our attention has been called to a news item recently published in the Detroit Free Press, under the caption of:

"National Medical Body of Examiners to meet. Michigan to permit physicians passing its test to practice in the state."

This item states, "Recently a National Board of Medical Examiners was appointed by Dr. Rodman, of Philadelphia, President of the American Medical Association," * * * "All states have their own board of medical examiners, but several of the states, among them Michigan, have expressed their willingness to permit physicians to practice who have passed a medical examination before this board, without taking the additional state board examinations."

The simple reading of the Michigan medical and allied acts, and a practical knowledge of the United States and Michigan State constitutions, would have prevented the publication of the above article. Laws regulating the practice of medicine in the several states are enacted under what is termed the *police power,* under the tenth amendment to the United States constitution. The term *police power* has in view the promotion and preservation of the public welfare. It is an attribute of sovereignty, which exists without reservation in the constitution, and is founded on the duty of a state to protect its citizens and to provide for the safety and good order of society. It is an essential element in all orderly governments, for upon it depends the security of the social order, the life and health of the citizen, the enjoyment of private and social life, and the beneficial use of property. It is the very foundation upon which the social system exists in a state. It is founded primarily upon an old civil law maxim, *"salus populi est suprema lex"*—"The welfare of the state is of first importance."

It will be seen, therefore, that the *police power* covers almost every activity of social life in the state, including certain trades, professions and callings, and a thousand and one other activities involved in state government. In a state government, under the police power, there is seemingly no beginning or end to its authority to regulate social and economic conditions.

Under the constitution of the state, a board created by the legislature, defining its duties, has no power to delegate its authority. Consequently, under the constitution of the state, and the constitution of the United States, it would be impossible for the Michigan Board of Registration in Medicine to delegate to the proposed National Medical Board its authority to issue certificates of qualification to physicians, and to recognize, in lieu of its own certificate of qualification, the certificate of the proposed national body.

In the exemption clause of every state medical act will be found this proviso: "This act shall not apply to the commissioned surgeons of the United States army, navy or marine hospital service, in actual performance of their official duties." The physicians exempted are graduates of accredited medical colleges, have been issued commissions (licenses) subsequent to passing a physical and medical examination conducted through the authority of the United States Government, under ideal standards and conditions, similar to the examination proposed by the national board. Nevertheless, these commissions, or licenses, are not primarily

recognized by state governments as legal qualifications to practice, even upon employees of the Federal Government, to say nothing of practicing upon the general public, hence the exemption clause in state medical acts. If the state medical boards are powerless, or have no authority to recognize a high standard, federal qualification, or certificate, how can they recognize the qualification, or certificate, of a voluntary association, especially so, when the constitution does not provide for the exemption of these certificates. It is true, perhaps, that one or two medical boards in the United States have taken upon themselves a legislative function, and in their regulations provide for the recognition of federal qualifications, but this in nowise affects the legal status of the question under discussion.

Under the so-called reciprocity clause, the legislature gives authority to the board to recognize the certificate of registration, or license, of another state in the Union, provided the qualification involved in such license is equivalent to the Michigan license. The licenses, or certificates, issued by other states, are based upon the same authority, i. e., the *police power* of the state in which such certificate is issued. The proposed national body is not a board created through the police power of any state, or under the constitution of the United States, and, consequently, has no authority. The fundamental value of any certificate, or license, is based upon legal authority, otherwise it has no value as a legal document. It may have value as evidence of qualification, or as testimony covering such qualification, but it cannot be recognized as a qualification in law, consequently, as evidence of qualification, the certificate issued by the proposed national board might, without question, be ideal, from the standpoint of an unauthorized qualification, but involving legal qualification it would be valueless. What applies to Michigan in this connection, would also apply to the other states in the Union. Eliminating the legal element in the proposed certificate or qualification, it would have a similar status to the Fellowship certificate issued by the recently created American College of Surgeons, and from this standpoint its actual value could be recognized, not only by the profession, but by the public.

Dr. Rodman, advocating this national board before the Federation of State Medical Boards two years ago, when his attention was called to the want of authority involved in his proposition, stated that an amendment to the United States constitution was possible. An amendment which would cover simply the right to issue medical licenses could not be had without involving the entire police power of the state, and it would abolish what is known as *state rights* and *state lines*, and Michigan, for example, would not be Michigan, but the United States of America, or perhaps a territory of the U. S. A. Likewise other states in the Union would be similarly affected.

This question of a voluntary national examining board is not new. It was suggested by Dr. Rodman fifteen years ago, to the National Confederation of Medical Examining and Licensing Boards, at a meeting held in Saratoga in 1900. A committee of the Confederation, however, reported against this plan to the American Medical Association, as follows:

"Against Voluntary National Examining Board.

"On motion of Dr. MacCormack, Dr. A. Walter Suiter, Secretary of the National Confederation of Medical Examining and Licensing Boards, was given the privilege of the floor.

"He said that at a meeting of the Confederation, held Monday afternoon, the subject of a Voluntary Board of National Examiners was discussed and subsequently referred to a committee. This committee reported as follows:

"Your committee to whom was referred the proposition originally made and discussed in the medical press by Dr. W. L. Rodman of Philadelphia, for the establishment of a voluntary board of national examiners, with instruction to consider the same, and report thereon to this confederation as to its feasibility, begs leave to report as follows:

"In the opinion of your committee, this confederation cannot endorse nor approve such a proposition for the following reasons, namely:

"1. A voluntary national examining board would have no power, no authority, or legal right to exist.

"2. No guarantee could be given of the continuance or permanency of such voluntary board, even were the laws of the several states so modified as to meet its requirements.

"3. Being a voluntary board, there could be no legal manner of constituting, changing, or limiting its membership, or defining its duties.

"4. Such a board would be representative of the profession only, and of the regular profession alone.

"5. Without the endorsement of a state board authorized by law to grant a license to practice, a certificate of qualification from the proposed voluntary board could have no legal value whatever, and under the existing laws of the several states, the state examining boards are required to conduct the examinations, and such boards cannot evade, nor surrender, such duty, even if they desired to do so.

"6. To attempt the stupendous task of securing the passage of amendments to the existing laws regulating the practice of medicine in the several states would entail enormous labor and expense, and would probably endanger the laws themselves.

"This report was received by the American Medical Association at its Saratoga meeting."

If this committee had limited itself in its report of its findings to reason No. 1, as above, there would have been no necessity for further comment. But the committee making this report had not in mind the old story of the man who had ninety-nine reasons for not paying his debts, the first reason being that *he had no money.* This reason being held sufficient, it seemed unnecessary to discuss the remaining ninety-eight reasons. Under reasons 2, 3, 5 and 6, the fundamental reason of the committee under No. 1 is lost sight of, involving the tenth amendment of the United States constitution covering the police power of states.

Dr. Rodman's main object in suggesting a national board in 1900 was to promote uniformity and the raising of standards, involving medical licensure in the several states, and as a result of this accomplishment, the practicability of interstate endorsement of medical licenses. At that time (1900) none of the states in the Union were recognizing a license issued in another state as a qualification for endorsement. In 1902 Michigan, Indiana and Wisconsin entered into reciprocal relations, agreeing to accept medical licenses of a certain definite standard for endorsement. Since then the majority of the better states, and at this time approximately forty states, have adopted the interstate endorsement policy, and some two thousand licenses are issued annually under the reciprocity clauses of the several states. Working in harmony with the national medical associations and the Association of American Medical Colleges, state medical boards have more than fulfilled the expectation of the originators of the practical and legal method of interstate endorsement.

Standards of preliminary and medical education, methods of administration and teaching, and uniformity of requirements have been increased at least 100 per cent. during the past decade, involving both medical colleges and state medical boards. The elimination of the low-grade college through higher requirements and more exact methods of administration has been a very important factor in the results obtained. *Recognizing and appreciating these results, it is difficult to understand an adequate reason for the attempt to establish an impossible (from the legal standpoint) national examining board at this time.* It has not even the merit of being synonymous with the policy of "swapping horses in the middle of the stream." This suggestive national board, which we believed completely and permanently anesthetized fifteen years ago, does not even furnish the other horse necessary to the pair. Would it not be a better policy to continue the good work already accomplished, which is built upon a legal foundation, rather than to divide our forces in attempting an impossible ideal?

There exists to-day, in the United States, a national association, namely, the Federation of State Medical Boards. Membership in this federation is limited to state medical boards—not members or ex-members of state medical boards. Consequently, the several schools of practice are represented in this organization. The constitution of the Federation of State Medical Boards provides for the creation of suggestive standards of preliminary and medical education, the recognition of standard medical colleges, methods of administration and the interstate endorsement of medical licenses. It is a semi-official body through its method of membership, and if a national board of examiners were possible in law, such board should owe its creation to this federation. If the suggested fees involved in the examination by the unofficial and self-constituted national board of examiners, to be obtained from the already financially over-burdened graduate, should be made available, either to the federation or to the several state medical boards, then an equivalent examination to that proposed by Dr. Rodman's method could be easily had, without the added expense of the recent graduate traveling from the western states and other distant points north, south, east and west, to Washington. which would involve, in the aggregate, a very large sum.

We are at a loss to understand the method by which Dr. Rodman delegates to himself the authority of state legislatures and state medical boards. The question naturally arises, did Dr. Rodman receive his inspiration from Henry Ford, or did Henry Ford receive his inspiration from Dr. Rodman? Their exploitations of higher ideas, involving methods of accomplishment, are synonymous, with this exception, Mr. Ford supplies the wherewithal, whereas Dr. Rodman exploits the innocuous, unsophisticated and financially embarrassed recent graduate.

In view of the above it seems unnecessary to state that the Michigan State Board of Registration in Medicine has not, as reported in the newspaper item, expressed, either formally or informally, its willingness to endorse the proposed certificate of qualification to be issued by the National Medical Body of Examiners.

INDIVIDUALIZATION IN INFANT FEEDING.

Probably there is no greater achievement in medicine than the bringing of an infant to the age of two years possessed of normal health and development, and there is no doubt that this result is largely dependent upon proper feeding. What you are at the age of two goes far in determining your capacity for development in later life.

The proper feeding of an infant always implies full consideration of individual problems —and routine feeding by "rule of thumb" or haphazard methods may conceivably lead to disaster and in fact often does so.

Nothing less than intelligent and careful investigation coupled with advice, based upon knowledge, can acceptably solve the problems incident to the successful feeding of an infant. This means that each infant must be studied as a unit, and developed as such, giving all due heed to his individual variations of structure, habit and idiosyncrasy.

Because the value of breast feeding stands pre-eminent we shall consider it first. From the maternal side there is present several matters of importance. Aside from her general health and strength there is the development and functional capacity of the mammary glands, the size and shape of the nipples, and cracks and ulcerations of the nipples, also the quantity and quality of the milk as effected by diet, hygiene, and habits. No pains or sacrifice aside from too great a strain upon an over-weak or diseased woman should stand in the way of suckling an infant. Then we have to note certain infantile factors such as insufficient strength for sucking, sore mouth, tongue-tie, cleft palate and other malformations, anyone of which may preclude successful breast feeding unless corrected or circumvented by available means.

Extra fat breasts must not be allowed to interfere with the babe's breathing—depressed nipples can usually be drawn out. Sore nipples, the pain from which may greatly diminish or even inhibit the milk flow, may be protected and healed, the diet and habits of the mother may very considerably modify the quantity and quality of the milk.

The weak baby may be fed the milk taken from the breasts until such time as he may gain sufficient strength to get it for himself. I have fed babies this way for three months and then had them suckle successfully until the proper time for weaning. Tongue tie may be cut, with immediate good results, while with deformities the milk may have to be pumped and fed during the entire period of lactation. Sore mouth usually gives no serious trouble if discovered and treated.

It should be almost a fixed rule that aside from plenty of water and the breast the newborn infant should receive nothing, as we thus avoid indigestion, disinclination to suck, because of repletion, and escape a heavy loss of weight and strength which is often due to lack of fluids and to the inanition fever which seems incident thereto.

I believe that many instances of failure of breast feeding are due solely to improper feeding during the first ten days. The length of feeding time and the interval cannot be rigidly pre-determined as several extremely variable factors are concerned. The babe should suck long enough to obtain a sufficient quantity of milk, which may be easily ascertained by weighing, and he should wait for his next meal until his stomach is empty, which may be two, three or four hours and sometimes even longer.

The present tendency is toward the longer feeding intervals, but surely there are instances where this may be disastrous as certain failing babies will apathetically starve to death if not fed frequently the small quantities that they can digest. Troubles from feeding too much or too often are much more common.

As most of these factors concerned may be quite easily determined, there is no excuse for not attempting to make those adjustments necessary to successful breast feeding, in the individual instance, and no babe should be subjected to untimely weaning until the case against the breast has been well proven. A careful investigation not infrequently shows some fault of quantity or quality of the milk which may be remedied by a supplementary feeding which may allow the breast feeding to be prolonged for months. Supplementary feeding should always follow the giving of the breast and not replace it—for this replacing the breast feeding with the bottle often determines a rapid failure of lactation.

I find that in changing from a short to a long feeding interval that it usually works well to give both breasts at each feeding to insure a sufficient quantity of milk and to avoid having the infant suckle an empty breast for a number of minutes. It is fairly easy to determine whether the breast milk obtained by an infant matches up to his caloric requirements and if it does and there is an unsatisfactory weight curve one must look to indigestion, with its vomiting, diarrhea or constipation, to infection

or other ill for an explanation and a remedy and not hastily resort to a haphazard change of food.

Now and then an infant must be aided in digesting his mother's or other woman's milk, I recollect an atrophied infant with marked carbohydrate intolerance who digested woman's milk with comfort only after it had undergone lactic acid fermentation—the only way in which you may reduce the sugar without disturbing the fat or proteid.

In proving the case against the breast or any other food upon which an infant may be doing poorly, you may often gain much information as to what food ought to be given. The working out of a rational formula for an infant depends very much upon the caloric requirement and as this in turn depends upon age and weight, individual variation must be more or less accurately satisfied. (To be continued.)

Editorial Comments

DUES.—Your 1916 dues are now payable and should be promptly paid to your local secretary. The delayment of prompt payment places an extra burden on your local secretary. You will greatly lessen his work by handing him your check at the next meeting.

The annual report of the Secretary-Editor will be published in the February issue together with the minutes of the mid-winter meeting of the Council.

Did you commence the New Year with a determination of being more businesslike in your financial affairs? The advertiser cannot come to you personally, therefore he sends his direct representative to interview you. If the advertiser called in person you would accord him a courteous interview. You should likewise accord his representative, the advertisement, equal courtesy. To that end, in respect to the advertiser, please read all our advertising pages. If you cannot do business with them, then write and express your appreciation for the call of his representative that is made upon you through the medium of your own publication.

Correspondence

Boston, Mass., Nov. 20, 1915.

Editor, *Journal of Michigan State Medical Society*,
Grand Rapids, Michigan.

Dear Sir:

Will you kindly insert in your *Journal* in some form that may seem suitable to you the following notice:

"The Evans Memorial for Clinical Research is desirous of coming into communication with as many physicians as possible who have used bacterial vaccines in the treatment of typhoid fever for the purpose of collecting statistics concerning the efficiency or nonefficiency of the method as a therapeutic measure. If any who have done this even with only one or a few cases will send their names and addresses, blank forms will be sent to them upon which uniform reports may be made. Due credit will be given to each in any reports that may be published. Kindly address all communications to Dr. W. H. Watters, 80 East Concord St., Boston, Mass."

Very sincerely yours,

FRANK C. RICHARDSON,
Clinical Director.

Detroit, Mich., Dec. 15, 1915.

Dr. F. C. Warnshuis, Editor,
Journal of Michigan State Medical Society.
Grand Rapids, Michigan.

Dear Sir:

My attention has been directed to the letter of Dr. Hathaway in the December, 1915 number of the *Journal*. In this letter Dr. Hathaway calls attention to the report of the Committee on Venereal Prophylaxis made at the Fiftieth Annual Meeting of the Michigan State Medical Society and printed in the *Journal* Vol. 14, No. 10, October, 1915, page 535.

"Today there is but one public hospital to which the syphilitic as such can gain admittance and be treated during the dangerous time of his infection."

Dr. Hathaway calls attention to two hospitals which receive these cases and I wish to call your attention to another.

The Grace Hospital of Detroit has for many years treated syphilis in all its forms.

A reference to the medical and surgical report of the Hospital for 1914 gives the following as the number of cases treated during the past two years: Early syphilis 130 cases; late syphilis twenty-seven cases.

Cases of both recent and late syphilis have been shown in the Clinics of the Detroit College of Medicine held in this Hospital.

It is evident that the Committee who made the report did not go to the hospitals for their information, but based their statement on hearsay evidence.

We trust that you will give this communication space in the *Journal* in order to correct any false impressions that the profession may have received from the report.

Yours very truly,

THE GRACE HOSPITAL,
W. L. Babcock, Superintendent.

Deaths

Resolutions for Dr. Johnson

The Huron County Medical Society met Friday evening, October 22, and elected the following officers: Dr. Armitage, President; Dr. Morden, Vice-President; Dr. Young, Secretary.

Resolutions of condolence were adopted with regard to the death of Dr. H. Johnson, of Caseville, as follows:

Whereas, our friend and colleague, Doctor Henry Johnson, after a long and active career of usefulness, has been removed from our midst by death; and,

Whereas, He was ever a faithful and never-failing attendant at all the meetings of the Huron County Medical Society; therefore be it

Resolved, That as a just and fitting tribute to his memory, we express our regret at his removal from amongst us, and we mourn one who was in every way worthy of our respect and esteem; and, be it further

Resolved, That our sympathy and sincere condolence are hereby tendered to the family of the deceased on the dispensation with which it hath pleased Providence to afflict them, and that this heart-felt testimonial of our sympathy and sorrow be spread upon the records of the Society, and that a copy of it be conveyed to the family of our departed colleague and brother.

DR. A. E. W. YALE,
DR. D. CONBOY,
DR. S. B. YOUNG,
Committee.

Dr. Frank D. Wheeler of Detroit died Nov. 29, after an illness of one year. After coming to Detroit and graduating from the Detroit Medical College in 1880 with the degree of M.D., Dr. Wheeler took a post graduate course in one of the leading medical institutions of Edinburgh, Scotland.

Dr. T. R. Allen, Ionia, died Dec. 4, in Chicago where he underwent an operation which it is understood was not a serious one and it is believed his death resulted from heart trouble. He had been a practicing physician in Ionia for the past forty-four years.

State News Notes

Dr. H. S. Gradle of Chicago held an Eye Clinic in Dr. D. Emmett Welsh's Clinic at the Soldiers Home in Grand Rapids. Six operations were performed. There were present Drs. Bernstein, Kalamazoo; V. A. Chapman, Muskegon; F. E. Grant, Kalamazoo; E. P. Wilbur, Kalamazoo; J. G. Huizinga, Grand Rapids; Louis A. Roller, Grand Rapids; W. P. Gamber, Muskegon; A. Leenhouts, Holland; J. E. Ferguson, Grand Rapids; G. W. Lowry, Hastings; J. J. Defendorf, Ionia; J. R. Rogers, Grand Rapids; E. W. E. Paterson, Grand Rapids; Maj. Grube, of the Soldiers Home.

The Twelfth Annual Conference on Medical Education, Public Health and Legislation will be held at the Congress Hotel, Chicago, Feb. 7 and 8, 1916.

Monday will be devoted to Medical Education, and Tuesday to Medical Legislation and Public Health.

On Wednesday, February 9, the Federation of State Medical Boards and the Association of American Medical Colleges will meet.

Dr. B. E. Manchester, one of the United Doctors' outfit, attempting to do business in Kalamazoo was arrested on complaint of Dr. B. D. Harrison, Secretary of the State Board. The warrant alleged unprofessional conduct and misleading advertisements.

Dr. C. B. Burr of Flint has been elected one of the directors of the National Security League. The doctor will be pleased to hear from anyone desirous of aiding in establishing local branches of this National organization.

Dr. Milton Chase of Otsego has a set of the Surgeon General's report of the Civil War which he wishes to dispose. Anyone desirous of securing such a set should communicate with the doctor direct.

The Gratiot and Isabella County societies have voted to consolidate to form a larger and stronger organization.

Dr. J. G. Cumming, assistant in hygiene and director of the Pasteur institute of the U. of M. has tendered his resignation to the Board of Regents.

C. C. Beach of Battle Creek has established a scholarship in medical research in the Medical Department of the State University.

President Hornbogen has appointed Dr. Guy L. Kiefer of Detroit as delegate to the National Legislative Committee Conference in Chicago.

Dr. Stewart Hamilton, formerly medical director of Harper Hospital, Detroit, has been appointed superintendent of that institution.

The new U. B. A. Hospital at Grand Rapids is practically completed and will be occupied sometime in February.

Dr. C. J. Durham of Muskegon was elected President of the West Michigan Homeopathic Society.

Alpena expects to open its new hospital during January. It has accommodations for twenty patients.

Dr. A. O. Miller of Freeport has located in Reed City.

Dr. W. E. Wilson, retiring interne Butterworth Hospital, has entered general practice in Grand Rapids.

Dr. W. Joe Smith of Cadillac has been appointed health officer to succeed Dr. D. Ralston.

Dr. and Mrs. H. L. Bower of Greenville celebrated their fiftieth wedding anniversary on Dec. 15.

Dr. N. H. Kassabian of Coopersville has moved to Detroit and is located at Highland Park.

County Society News

CHIPPEWA COUNTY

The annual meeting of the Chippewa County Medical Society was held in this city on the evening of Dec. 7. The minutes of the last previous meeting were read and approved. The Secretary and Treasurer's reports were received and adopted.

After the reading of a most interesting paper on "Acute Anterior Poliomylitis" by J. J. Suffin it was fully discussed.

The following officers were elected for 1916.

President—Dr. J. V. Yale, Sault Ste. Marie.
Vice Pres.—Dr. R. E. Stocker, Brimley.
Sec.-Treas.—R. C. Winslow, Sault Ste. Marie.
Delegate—Dr. E. H. Campbell, Newberry.
Alternate—Dr. J. A. Ferguson, Sault Ste. Marie.

R. BENNE, Secretary.

GRATIOT COUNTY

The Gratiot County Medical Society met in the Wright House in Alma, Dec. 16. Eighteen members and one visitor were present; the minutes of the previous meeting were read and approved. The secretary's report was read as follows:

Eight meetings and one banquet were held during 1915. There are thirty-two doctors in the county of whom twenty-seven were members the past year.

Balance on hand Dec. 31, 1914 ....$	4.80	
Received from members	134.00	
		$138.80
Honorariam to Secretary for 1914 $	10.00	
Remitted to State Secretary	81.00	
Expense of invited guests	19.26	
Printing, postage, envs., etc.	17.81	
Honorariam to Secretary for 1915	10.73	
		$138.80

Meting adjourned to meet with Isabella-Clare.

E. M. HIGHFIELD, Secretary.

Pursuant to a joint notice from the Secretaries of Gratiot and Isabella-Clare, eighteen Gratiot and five Isabella-Clare members met at the Wright House in Alma to consider consolidating. After some preliminary discussion a motion was made by Dr. Bagley, and supported that we join to form the Gratiot-Isabelle-Clare Society (GIC) Carried.

Officers were then chosen as follows:

Pres.—Dr. I. N. Brainerd, Alma.
Vice-Pres.—Dr. C. D. Pullen, Mt. Pleasant.
Secretary—Dr. E. M. Highfield, Riverdale.
Board of Censors—Drs. M .F. Bronstetter, H. V. Abbott, E. H. Foust.

It was voted we meet once a month, that we charge $2.00 a year for County dues. All members of each society are declared members of the new Society. Dr. L. J. Burch of Mt. Pleasant was elected to membership for 1916.

No papers were read.

E. M. HIGHFIELD, Secretary.

HILLSDALE COUNTY

The Hillsdale County Medical Society held its Annual Meeting Dec. 17, 1915 when the following program was rendered.

Symposium Anesthetics.
Discussion lead by Drs. E. A. Martindale, B. F. Green.
General Discussion.

President Address. Pernicious Anemia.
H. H. Frazier.

The following officers were elected for the year 1916:

President—Dr. O. G. McFarland, Montgomery.
Vice-President—Dr. H. C. Miller, Hillsdale.
Sec'y-Treas.—Dr. E. A. Martindale, Hillsdale.

E. A. MARTINDALE, Secretary.

KALAMAZOO ACADEMY OF MEDICINE

The Kalamazoo Academy of Medicine held its annual meeting on December 14, 1915 and elected the following officers for 1916.

President—Dr. A. L. Robinson, Allegan, Mich.
First Vice-Pres.—Dr. G. E. Youngs, South Haven.
Second Vice-Pres.—Dr. F. A. Butterfield, Lawrence, Mich.
Third Vice-Pres.—Dr. Alice B. Ellsworth, Kalamazoo, Mich.
Secretary—Dr. Leslie DeWitt, Kalamazoo, Mich.
Treasurer—Dr. R. G. Leland.
Board of Censors for Three Years—Malcolm Smith, Allegan, Mich. and Dr. John Stewart of Hartford, Mich.
Delegates to the Michigan State Medical Society for 1916—Dr P. T. Butler, Kalamazoo, Mich.; Dr. A. L. VanHorn, Otsego, Mich.; Dr. W. F. Hoyt, Paw Paw, Mich.
Alternates—Dr. L. V. Rogers, Galesburg, Mich.; Dr. C. A. Bartholomew, Martin, Mich.; Dr. N. D. Murphy, Bangor, Mich.

The essayists of the day were Dr. V. C. Vaughan of Ann Arbor and Dr. John N Hurty of Indianapolis and Dr. Frederick Shilito of Kalamazoo.

C. B. FULKERSON, Secretary.

SECRETARY'S ANNUAL REPORT FOR 1915.

The Kalamazoo Academy of Medicine has convened for six special sessions, two memorial, three programs and one pertaining to public welfare, and twenty-one regular meetings. The largest attendance at any regular or special meeting was 185, and the general average was fifty-seven, or eight more than the general average for 1914.

The society has five honorary members, one of whom is still in active practice, six associate members, two non-medical members, and one hundred forty regular members. In 1914 we had one hundred forty-seven regular and active members.

We increased our dues in 1914 from four and five dollars to five-fifty and eight dollars respectively. This, no doubt, is one of the causes for the decrease in membership.

One honorary member, Dr. Matilda Towsley, of Kalamazoo, and one regular member, Dr. L. G. Rhodes, of South Haven, have been removed from our midst by death.

The medical survey of Allegan and Van Buren and Kalamazoo counties is as follows:

Allegan County.—Doctors that are registered, 37. Doctors that are members of the Academy, 19, or 51 per cent. of the medical profession in Allegan county belong to the Kalamazoo Academy of Medicine as compared to 60 per cent. in 1914. There are many medical men in Allegan county eligible to membership but likely belong to some other county society more accessible.

Van Buren County.—Doctors that are registerd, 36, 26 of which are members of the Academy, or 72.2 per cent belong to the association, an increase of 2.2 per cent. since 1914.

Kalamazoo County.—Number that are registered, 107, of which 84 are members, or 79.1 per cent. belong to the Kalamazoo Academy, an increase of 1.1 per cent. since 1914. There are five or six men that are eligible, but are not members of the association. The total number registered in the three counties is 181, of which 129 are active members, or 71.4 per cent., a decrease of 2.6 per cent. since 1914.

For 1915 the Bulletin has been issued exclusively for announcements and programs, for abstracts of papers and current news items pertaining to the medical profession locally and medicine in general.

The Acadamy of Medicine is greatly indebted to The Upjohn Company for the liberal contribution toward making the Bulletin a success and elimination of error in its preparation.

The Academy of Medicine closes a successful year in many of the various phases of its work. There are three phases of activity that need development, viz: Demonstration of specimens, presentation of clinical cases and arrangements for clinics on Academy days at the hospitals, and the increase of our membership. Surely our Academy is an active organization, but there are men who do not realize the high standard of our programs. Personal work on the part of our membership should be done to bring new men and to get all of the membership to attend. Our average attendance is only a little more than one-third of our membership. Our average attendance should be at least one-half of the total membership or about seventy or seventy-five.

On December 14 your humble servant will have completed the three-year period of service as secretary. My association with the membership and officers has been most pleasant, and I wish to take this opportunity to thank the society for the courtesy extended to me during these years. Though at this time I will be relegated to the ranks of the Academy, I will always endeavor to do what I can to maintain the present standard of the Association.

Respectfully submitted.

C B. FULKERSON, Secretary.

TREASURER'S ANNUAL REPORT.

Receipts.

Balance brought forward from 1914	$ 2.41
Received of active members for dues	923.25
Associate members for dues	13.00
Other sources	2.00
Total	$940.66

Disbursements

State secretary	$425.00
Guests	86.59
Postage and stationery	98.28
Printing and Bulletin stock	84.00
Library	54.75
Dispatches—telegrams, long distance telephone and local	49.58
Care of rooms	16.42
Lighting	6.39
Flowers	3.50
Ledger for recording the minutes	5.20
Miscellaneous	2.40
Scientific purposes	6.64
Total	$836.75

Cash on hand	$103.91
Special assessment with interest	$205.38

Respectfully submitted,

DR R. G. LELAND, Treasurer.

BUDGET FOR 1916.

State society	$420.00
Guests	125.00
Stenographer	25.00
Permanent improvements	27.00
Postage	100.00
Flowers	15.00
Lighting	10.00
Janitor	25.00
Library	75.00
Anti-Tuberculosis Society	28.00
Telephone and telegrams	20.00
Printing	70.00
	$940.00
63 members at $8.00 per member	$504.00
77 members at $5.50 per member	423.50
5 members at $2.50 per member	12.50
	$940.00

(Signed) DR. A. S. YOUNGS,
DR. R. G. LELAND,
DR. C. B. FULKERSON,

ANNUAL REPORT OF THE PROGRAM COMMITTEE.

During the past year there have been twenty-one regular Academy programs and three special programs. The first meeting in July was dispensed with so as to allow members to attend the Northern Tri-State meeting held in Ann Arbor The usual South Haven meeting was not held because of the sad and untimely death of Dr. Rhodes

Of the twenty-four meetings, eighteen were held in the Academy rooms, two in the Burdick House Auditorium, one in the Kalamazoo State Hospital, and one meeting each at Allegan, Vicksburg and Lake Cora (annual picnic).

There were forty-five papers, addresses and case reports presented at the meetings. Of this number, twenty-six came from essayists residing away from Kalamazoo, seventen from Academy members, and two from local non-medical men. There were six reports of clinics and conventions attended by Academy members.

The names and addresses of our essayists are the following: Drs. Warthin, Camp, Darling, Hewitt, Vaughan and Schmidt, from Ann Arbor, Michigan. Drs. Percy, Shambaugh, Beck, DeLee, Brophy, Lewis Goldstine, Murphy, Ridlon and Koessler from Chicago, Ill Doctor Bloodgood from Baltimore, Maryland; Dr. W. J. Mayo, from Rochester, Minn.; Dr. Porter from Fort Wayne, Indiana; Drs. Morley, Taylor and Vaughan, from Detroit, Mich.; Dr. Lyons, from Jackson, Mich.; Dr. Reye, from Pontiac, Mich.; Drs. Babcock, and Pfahler from Philadelphia, Pa.; Dr. Hurty, from Indianapolis, Ind.; and Dr. Campbell, from Grand Rapids, Mich.

A table of the subjects presented during the year is as follows:

Syphilology and Dermatology	3	Obstetrics	6
Cancer Research	1	Orthopedics	1
Nervous Diseases	1	Oral Surgery	1
Gynecology	1	Tuberculosis	4
Oto-Laryngology	4	Hygiene	1
Surgery	5	Non-Medical	1
Psychiatry	4	Reports of Clinics	6
Gastric Diseases	2	Therapeutics	1
Internal Medicine	6	Eugenics	1
Pediatrics	1	Chemistry	1

Twenty-one of the twenty-six out-of-the-city essayists are professors or instructors in medical universaries or medical schools.

(Signed) LESLIE H. S. DEWITT, Chairman.

ANNUAL REPORT OF THE CLINICAL COMMITTEE.

Five special clinical programs have been prepared during the year: Two surgical, one neurological, one tubercular and one orthopedic. Twenty or more cases have been presented for diagnosis, treatment, or some surgical procedure.

Respectfully submitted,

FREDERICK M. ILGENFRITZ, Chairman.

REPORT OF THE LIBRARY COMMITTEE.

The effort of the Library Committee can be briefly summarized as an attempt to improve to a degree the amount and scope of information obtained through current medical literature. To this end besides renewing old subscriptions we have taken it upon ourselves to enter new subscriptions for the following journals:

The Lancet.

Surgery, Gynecology and Obstetrics (with abstracts).

Journal of Infectious Diseases.

Progressive Medicine.

The American Journal of Medical Sciences.

Other journals, especially those of the specialties, may profitably be added later.

The library shelves are sadly in need of renovation. Many of the books are old and absolete and should be replaced by newer works if a reference library is desired.

A set of Osler and McCrae's "Modern Medicine" has been added.

A reading room with stated hours would add greatly to the efficiency of the library and would prevent the necessity of journals being taken from the room.

Respectfully submitted,

(Signed) W. C. HUYSER, Chairman.

ANNUAL REPORT OF THE ANTI-TUBERCULOSIS COMMITTEE

The committee on Anti-Tuberculosis wishes to report that it has done no special work but it has co-operated in every way possible with the Anti-Tuberculosis Society and the Dispensary on East Lovell street.

(Signed) R. G. LELAND, Chairman.

ANNUAL REPORT OF THE SOCIAL HYGIENE COMMITTEE.

Eight talks were given through the winter and spring to groups of shop girls and business women, and to one mission club numbered over sixty. Their subjects were as follows:

First Aids to Beauty—care of skin, etc.
Dust-Born Diseases.
Common Dangers Lurking in Public Places.
Physiology and Hygiene of the Pelvic Organs.
Social Diseases and Their Effect upon the Race.
Preparation for Motherhood.

As a direct result of this club work a group of twelve young mothers was formed for the purpose of gaining information relative to the care and rearing of their children in regard to information concerning sex. One talk was given a mother's club upon "Hygiene of the Infant," touching particularly upon the habit of masturbation.

One talk has been given a club of young women of the Kalamazoo College upon the subject of "Juvenile Court and Social Diseases."

Respectfully submitted,

DR. ALICE BARKER ELLSWORTH, Chairman.

ANNUAL REPORT OF THE SOCIAL FUNCTIONS COMMITTEE.

As chairman of your Social Functions Committee I beg to submit the following report:

We have had fourteen luncheons at the local hotels, one at Vicksburg, and one at Allegan, the members of the Academy being entertained by the Allegan county physicians. We have also had a social session at Lake Cora, August 24, for the doctors and their wives, which was very well attended, and on March 10 we were entertained at the Michigan State Hospital by the staff.

They were all very well attended, sixty-five being the largest number at any single luncheon, and twenty-two being the general average at each luncheon.

Yours respectfully,

DR. R. U. ADAMS, Chairman.

ANNUAL REPORT OF THE BOARD OF CENSORS.

There have been eight applications presented to the Board of Censors for admission into the Academy during the year of 1915. Six of these are active members and two associate. All of these have been unanimously acted upon by the Board of Censors and seven have been duly elected to membership in the society. The application of Dr. H. W. Stuck, of Allegan, will be presented to the society for its final reading at the annual meeting. Those who have been duly elected to active membership are: Drs. W. A. Singleton, of Hickory Corners; R. A. Morter, of Kalamazoo; Wm. R. Young, Lawton; W. R. Vaughan, Plainwell; H W. Wiley, South Haven; and the associate members are: Dr. L. H. Harvey, Prof. W. E. Praeger, both of Kalamazoo.

Respectfully submitted,

W. A. STONE, Chairman.

ST. CLAIR COUNTY MEDICAL SOCIETY

Regular meeting of the St. Clair County Medical Society was held in Port Huron Thursday evening Dec. 2. Election of officers was the important event of the meeting.

President—Dr. A. J. McKenzie.
Vice-President—Dr. W. H. Morris.
Secretary-Treasurer—Dr. W. W. Ryerson.
Delegate—Dr. J. L. Chester.
Alternate Delegate—Dr. C. B. Stockwell.
Director three years—Dr. S. K. Smith.

A number of interesting cases were reported and discussed by the members.

Dr. Exelby was elected a member of the Society.

W. W. RYERSON, Secretary.

SHIAWASSEE COUNTY

The annual meeting of the Shiawassee County Medical Society was held at Owosso in Dec. 7, 1915 at the Hauck Hotel at 7:30 p. m. There was a good attendance. The annual election was held and the following officers elected.

President—Dr. P. S. Willson, Owosso.
Vice-President—Dr. L. M. Cudworth, Perry.
Secretary-Treasurer—Dr. W. E. Ward, Owosso.
Delegate—Dr. S. S. C. Phippen.
Board of Directors—Dr. J. A. Rowley, Durand; Dr. A. L. Bailey, Chesaning; Dr. O. B. Fritch, New Lothrop.
Medico-Legal Representative—Dr. C. M. McCormick, Owosso.

Dr. Guy L. Kiefer of Detroit addressed the Society on the subject of "Diphtheria" and his talk was very much enjoyed. A free discussion was also very instructive. He was given a vote of thanks. The Society then adjourned to an oyster supper and spent a social hour together.

W. E. WARD, Secretary.

Book Reviews

THE MEDICAL CLINICS OF CHICAGO. Volume I Number III (November, 1915). Octavo of 200 pages. 23 illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Price per year. Paper, $8.00. Cloth $12.00.

DISEASES OF THE NOSE AND THROAT. By Algernon Coolidge, M.D., Professor of Laryngology in the Harvard Medical School. 12mo. of 360 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, $1.50 net.

This is an interesting ready reference to the important details of examination, diagnosis and treatment of the upper respiratory tract. The work is bound to receive a most cordial reception for it places before the reader the most essential facts and procedures in dealing with diseases of the nose and throat.

A TEXT-BOOK OF PATHOLOGY. By Alfred Stengel, M.D., Professor of Medicine, University of Pennsylvania, and Herbert Fox, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. Sixth Edition, Reset. Octavo of 1045 pages, with 468 text-illustrations, many in colors, and 15 colored plates. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, $6.00 net, Half Morocco ,$7.50 net.

Extensively revised and fully to up to date. Excellently compiled and perfect in typographical workmanship. That is the impression gained upon examining this new edition.

It is a discussion of pathological conditions that enables the student and graduate to become conversant in a most clear manner with the phenomena that exist in given diseases. It certainly deserves a place in the library of every progressive practitioner. The text and the valuable illustrations render it a work of exceptional excellence.

THE PRACTITIONER'S VISITING LIST FOR 1916. Four styles: weekly, monthly, perpetual, sixty-patient. Pocket size; substantially bound in leather with flap, pocket, etc.; $1.25. net. Lea & Febiger, Publishers, Philadelphia and New York.

A most useful and handy visiting list for general practitioners.

STEREOSCOPIC ANATOMY OF THE BRAIN. Surface and Localization. By Wm. Fuller, M.D. Section One consists of ten cards. Price $2.00. Dr. Wm. Fuller, Grand Rapids, Mich.

This illustrative series of ten cards containing sterescopic views of actual dissection is of intense value to every diagnostitian and surgeon. It is the first series of a Pictorial Anatomy of the brain, with each view there is given a concise, descriptive, identifying text.

Dr. Fuller's studies and dissection of the brain and central nervous system are well known. He stands as a peer, an authority, on the subject. To have thus presented to us in pictorial form a complete dissection of the brain, enables us to secure the deductions and results of his years of investigation in concise form.

The result of his labors are most commendatory. This series should indeed be the recipient of universal endorsement and be met with a large sale.

We believe it to be the best source from which we may become intelligently conversant with the true anatomy of the brain and its functions.

SYPHILIS AS A MODERN PROBLEM. By Wm. Allen Pusey, M. D. Professor of Dermatology in the University of Illinois. Cloth, 129 pages. Price 25 cents. American Medical Association, Chicago.

This monograph discusses the problems of syphilis as they affect the individual and society. The topics considered are of interest to layman and physician but are originally intended for the enlightenment of the layman. It is but one of the many efforts of the American Medical Association in its campaign of Enlightenment of the Public in Regard to Health Matters.

The effort is a substantial presentation of the subject, just what has long been wanted. We sincerely hope our readers will secure a number of these volumes for distribution among the influential men of their community.

EMERGENCY SURGERY. By John W. Sluss, A.M., M.D. Associate Professor of Surgery, Indiana University School of Medicine. Surgeon to the City Hospital. Third Edition, revised and enlarged with 685 illustrations. Leather 831 pages. Price $4.00 net. P. Blakiston's Son & Co., Philadelphia.

This is a compilation of methods and technic of procedure in emergency cases where surgery is immediately indicated. It thus forms an admirable guide for the physician who is called upon to immediately undertake the surgical treatment of these conditions. The principles laid down are adequate and reliable and represent the practices of the day. The manual, in its third revision, thus becomes of value. Our greatest objection and criticism is directed to the illustrations which in many instances are crude, schematic and frequently of no more value than to consume space. An improvement in illustrative maerial would markedly enhance the value of the manual which is admirable in its descriptive text.

FRACTURES AND DISLOCATIONS Diagnosis and Treatment. Miller E. Preston, A.B., M.D. Denver, Colo. Cloth 809 pp. 860 illustrations. Price $6.50. C. V. Mosby Co., St. Louis, Mo.

The volume is composed of a discussion of the entire subjects and is amplified with many illustrations of fractures that were taken very soon after the fracture was sustained—thus there is imparted valuable clinical information. Autogenous Bone Grafts is thoroughly discussed and technic described. The text is clear and the treatment fully outlined.

The work equals those in existence on the subject and excels in its "up-to-dateness." It really behooves every practitioner to be in possession of all the data obtainable on fractures, dislocations and their modern treatment. This volume will enable physicians to render better service to their fracture cases. As such it is recommended.

Miscellany

Some "Patent Medicines" for External Application.—The following statements of composition is indicated by the reports of various state boards of health, the government chemists and the A.M.A. Chemical Laboratory: Amarol, a "complexion beautifier," is composed of Epsom salt 95 per cent. and borax 5 per cent. Anti-Freckle Lotion (Gustin's contains mercuric chloride 1.5 per cent., alcohol 2 per cent. and water 96.5 per cent. Calocide, for "foot trouble," is sodium chloride 22.44 per cent., borax about 37.58 per cent., alum about 39.35 per cent., tannin small amounts. Cerol, which "cleans and clears the skin," is boric acid, stearic acid and perfume. Clearola, which will "whiten the skin," is sulphur. Cuticle Acid, to "remove dead skin," is alcohol 10 per cent. and oxalic acid 2 per cent. Derma-Royale for skin affections, is a dilute alcohol-glycerin solution with small amounts of camphor, myrrh, benzoin and possibly other aromatics in suspension. Eptol, a wrinkle remover, is essentially borax 37 per cent., soap and stearic acid 63 per cent. Fatoff was found to be essentially soft soap. Glorial Balm, a vanishing toilet cream, is composed of stearic acid, soap and borax 23.7 per cent., water 76.3 per cent. Gloriol Glowene, said to be a substitute for soap, is soft soap. Zemo, for eczema, pimples, dandruff and similar affections, appeared to be a watery-alcoholic solution containing methyl salicylate, thymol borax, tannic acid, glycerin, menthol and phenol-like body (*Jour. A. M.A.*, Oct. 16, 1915, p. 1365-7).

Lactopeptine and Elixir Lactopeptine.—Lactopeptine is sold under the claim that it contains pepsin, diastase, pancreatin, lactic acid and hydrochloric acid. In 1907 the Council on Pharmacy and Chemistry reported that Lactopeptine was practically inert—"essentially a weak saccharated pepsin," devoid of tryptic activity. An examination made by the Council in 1913 confirmed the previous findings. Nearly four months after publication of the last report, the manufacturers protested against the report claiming that Lactopeptine possessed pancreatic activity and contained "loosely combined" hydrochloric acid. The Council now reports that an examination of the market supply demonstrated that a few recently manufactured specimens showed slight (therapeutically negligible) tryptic activity, but that most showed none; the amount of hydro-

chloric acid was insignificant. Again declaring Lactopeptine and Elixir Lactopeptine ineligible for New and Nonofficial Remedies, the Council points out that, whatever the tryptic activity of the mixture, it is therapeutically useless. Mixtures of pepsin and pancreatin are irrational. The two substances are not indicated in the same conditions nor can they act together. Under physiologic conditions such mixtures are chemically impossible. In a liquid medium the two substances destroy each other (*Jour. A.M.A.*, Oct. 23, 1915, p. 1477).

The N. F. Imitation of Elixir Lactopeptine.—Nearly forty years ago the essential worthlessness of Lactopeptine was brought to the attention of the pharmaceutical profession. In spite of this knowledge the pharmacists have included imitations of Lactopeptine and Elixir Lactopeptine in the National Formulary under the titles Compound Powder of Pepsin and Compound Digestive Elixir. The *N.A.R.D. Journal,* devoted to the business rather than the professional side of pharmacy, defends the Compound Digestive Elixir on the ground that "physicians keep right on prescribing it." The pharmaceutical profession should consider that pharmacists will in the end loose the confidence of the medical profession and the public by the tolerance of worthless pharmaceuticals (*Jour. A.M.A.*, Oct. 23, 1915, p. 1467).

Cardui, the Story of a Nostrum.—Harper's Weekly (October 23) traces the growth of the Wine of Cardui business. The author, stated to have been employed by the manufacturers, denies that the nostrum will perform the many wonders claimed for it by the manufacturers, and says that there is one miracle that Cardui can perform—it can make money (*Jour. A.M.A.*, Oct. 23, 1915, p. 1466).

Camphor, Natural and Synthetic.—Though having the same chemical composition, natural camphor is levorotatory while synthetic is optically inactive, it being a mixture of levorotatory and dextrorotatory molecules. Synthetic camphor, used externally and in moderate doses internally, has been reported to have the same effect as natural camphor. The evidence is however unsatisfactory. The natural product being readily obtainable, there is no warrant for the therapeutic use of synthetic camphor until more conclusive evidence is at hand (*Jour. A.M.A.*, Oct. 30, 1915, p. 1555).

Swan's Rheumatic Bacterin (Mixed) No. 47.—According to the manufacturer, The Swan-Myers Co., Indianapolis, Ind., this preparation contains pneumococci, Friedlaender's bacilli and streptococci (polyvalent). The Council on Pharmacy and Chemistry refused to admit this vaccine to New and Nonofficial Remedies because there is no satisfactory evidence that either the pneumococcus or Friedlaender bacillus is concerned in the etiology of acute or chronic rheumatism or rheumatoid arthritis and no conclusive evidence that the streptococcus is an etiologic factor (*Jour. A.M.A.*, Nov. 6, 1915, p 1662).

THE ANTITOXIN TREATMENT OF DIPHTHERIA.

It is a generally recognized fact trat antidiphtheric serum has in large measure robbed diphtheria of the dread with which it was formerly regarded. In the twenty years since its introduction into therapeutics it has saved countless lives and given to the medical profession control over a disease in the presence of which the physician had previously been all but helpless. The value of diphtheria antitoxin, both remedial and prophylactic, rests upon so sure a basis that it requires no word of commendation. In the language of an eminent American pediatrist "no table of figure is so convincing to an individual as personal experience, and by this argument one by one the opponents of antitoxin have been converted."

What make of diphtheria antitoxin to employ is a question which, sooner or later, confronts every physician. It is a question that should not be answered "off-hand." On the contrary, it merits the most thoughtful consideration. Obviously, all antidiphtheric sera are not of equal merit. The antitoxin selected should be a product of established purity and potency—a product, moreover, that is backed by experience, scientific knowledge and adequate manufacturing equipment. Perhaps the name which comes most promptly to mind in this connection is that of Parke, Davis & Co., among the earliest and now the largest producers of diphtheria antitoxin. That this concern regards the business of serum production as one not only worthy of the highest skill and endeavor, but actually demanding it, is evident from this excerpt from a current announcement:

"When (in 1894) we undertook the manufacture of diphtheria antitoxin, we had one dominant ambition: to produce an antitoxin that should leave nothing to be desired—an antitoxin that the physician might administer at a critical moment with assurance that it would not fail him. In all the years that have since elapsed we have never once lost sight of that ideal. Diphtheria antitoxin that is carefully, scientifically, conscientiously made demands a large expenditure of time and money. The cost is amply justified. The value of a human life cannot be measured in dollars and cents. We produce the best possible antitoxin, and we spare no expense in doing it."